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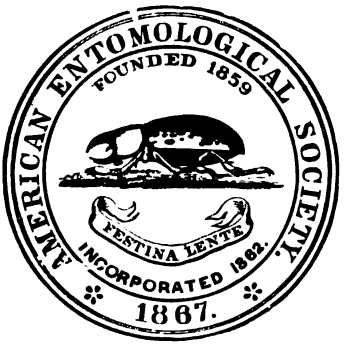

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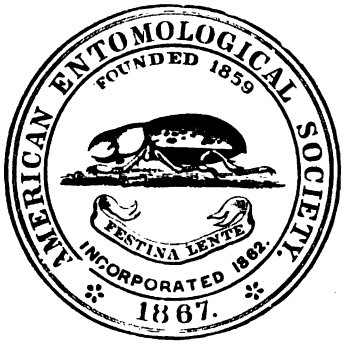

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TRANSACTIONS

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VOLUME XXXI.

Revision of the Genera and Species of the Tineid Subfamilies Amydriinæ and Tineinæ inhabiting North America.

BY WILLIAM G. DIETZ, M.D.

The present essay is the result of studies, carried on over a period of about three years, of our North American species of the Microlepidopterous family Tineidæ in its restricted sense, or more explicitly stated, in the sense of the older authors, exclusive of the Adelidæ and Taliporidæ. The pursuit of these suffered many interruptions and encountered not a few difficulties. The former chiefly due to professional duties, the latter: 1st, to the comparatively small number of well authenticated and recognized species among the large number enumerated in our lists and found in collections; 2nd, the descriptions, scattered among various publications, principally periodicals and long out of print, are often defective and leave much to be desired to enable a positive identification of a given species.

Fortunately, however, the existence of Dr. Clemen's types in the collection of the American Entomological Society, at the Academy of Natural Sciences, Philadelphia, and a number of the types of Mr. Chambers and several of Prof. Zellers, in the Museum of Comparative Anatomy, Cambridge, Mass., has enabled me to examine and study these and thus clear up many doubtful points not possible otherwise. In this connection I wish to express my special obligation to Prof. Samuel Henshaw of Cambridge, and also to Dr. Henry Skinner of Philadelphia for the courtesy and assistance extended to me on these occasions. I likewise wish to express my deep appreciation to my friend and colaborator, Mr. A. Busck of Washington, D. C., for much valuable advice, loan of material and

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transcripts made from publications not in my possession. To Mr. W. D. Kearfott I am indebted for some very interesting material.

Dr. Dyar in his most valuable "List of North American Lepidoptera, etc.,"* has given a complete index to the literature of the genera and species described up to the time of its publication. I shall therefore simply refer to this list, giving page and number of species. The only exception to this are three species described by Mr. A. Busck since the publication of Dr. Dyar's work.

To claim that this paper shall be exhaustive of the subject would be ludicrous, that it be free from error, worse than folly. I have endeavored to clear the way to some extent at least of the many difficulties to be encountered by the student of this division of our North American Micro-lepidoptera.

Passing now from these introductory remarks, I shall briefly indicate the limitation of the subject treated of. This is practically included in the family Tineidæ of Prof. J. B. Smith's List of Lepidoptera of North America, edited 1901, to which must be added the genus *Amydria* Clem., which for some unaccountable reason is there placed among the Gelechidæ. However, while the genera in this as well as in subsequent lists, are placed side by side, without further systematic arrangement, the recognition of a character, apparently overlooked heretofore, has necessitated the division into two subfamilies of the large family Tineidæ, as defined by Mr. E. Meyrick,† and generally accepted by entomologists here and abroad. These two subfamilies are distinct and sharply defined and one of these, the Amydriinæ, owing to the more or less distinct furcation of vein 1b of the hindwings, should follow immediately after the *Tortricina*. Among the Tineinæ, this character occurs only—as far as I know—in *Breckenridgia* and is accompanied by vein 1*e* being present.

The two subfamilies are thus characterized as follows:

Head rough-haired or almost entirely smooth-scaled. Tongue and maxillary palpi rudimentary. Labial palpi strongly developed, porrect and more or less ascending, second joint with a brush, more or less developed, or simply thickened with scales beneath, terminal joint pointed, erect, or rarely (*Apreta*) obtuse and depressed. Vein 7 of forewing to costa or rarely to apex, 1*b* furcate at base. Hindwings as wide as the forewings, vein 1*b* more or less distinctly furcate at base, 1*e* always distinct ..... **Amydriinæ.**

* Bulletin of the United States National Museum, No. 52.

† Handbook of British Lepidoptera, 1895, p. 707.

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Head entirely rough-haired. Maxillary palpi well developed, polyarticulate and generally plicate; very rarely (*Tineola*, *Tenaga*,) rudimentary. Antennæ never exceeding length of forewings, basal joint not dilated into an eyecap. Vein 7 of forewing to costa. Hindwings with vein 1*b* simple at base (except *Breckenridgia*); 1*c* often absent.
Tineinæ.

Subfamily AMYDRIINÆ.

Head entirely rough haired (*Amydria*, partim), or scales more or less closely appressed, at least the face, occiput generally more or less rough, either in a whirl each side behind the eyes, or a border of coarse, erect or recurved hairs. Tongue and maxillary palpi obsolete. Labial palpi well developed, ascending, rarely (*Apreta*) with the third joint depressed; second joint with a brush of stiff hairs (*Amydria*), or simply thickened with scales beneath, and with stiff setæ along the outer margin, flattened in *Setamorpha*; third joint flattened (except *Amydria*, partim and *Paraneura*). Antennæ nearly as long as the forewings (except *Amydria*); simple, or rarely biciliate in the male (*Paraplesia*); eyes generally small, not very prominent. Forewings elongate elliptic to lanceolate, 12 or 11 veins, 7 to costa, or rarely to apex; 1*b* furcate at base. Hindwings ovate to ovate lanceolate, about as wide as the forewings. Cilia not exceeding 1. Legs of moderate length; tarsal joints rarely (*Apreta*, *Epichæta*) with an apical whirl of spinules.

The species, with few exceptions, present a rather uniform and characteristic habitus. The general coloration in almost all, some shade of ochreous, with dark markings, the latter rather variable and rarely sharply defined. It should be noted that the present subfamily is nearly equivalent to Lord Walsingham's subfamily Setomorphinæ,* but as his definition would exclude the genus *Amydria* I prefer the term here adapted.

The genera recognized are distinguished as follows:

Second joint of labial palpi with hair brush beneath; fore- and hindwings with all veins present and free.....**Amydria.**
Second joint of labial palpi thickened beneath with scales; third joint flattened; veins not all free.
Third joint of labial palpi erect, smooth, or with a few isolated setæ. Joints of hind tarsi without apical whirl of spinules.
Antennæ of male biciliated; head rough-haired.....**Paraplesia.**
Antennæ of male not biciliated; scales of face and vertex more or less appressed.

* African Micro-Lepidoptera, Trans. Ent. Soc. Lond., 1901, p. 81.

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Both wings with veins all present.
Vein 7 of forewing out of 8.....**Paraneura.**
Veins 7 and 8 of forewing out of 9; veins 3 and 4 stemmed.
Setomorpha.
Forewing with 11 veins, 7 and 8 out of 9.
Hindwings with 8 free veins.....**Epilegis.**
Hindwings with 7 veins; 5 and 6 stemmed.
Veins 5 and 6 of forewings stemmed..... **Apotomis.**
Veins 5 and 6 of forewings free.....**Semiota.**
Third joint of labial palpi with spreading bristly hairs; joints of hind tarsi with apical whirl of spinules. All veins present.
Third joint of labial palpi broad and very short, depressed; veins 9 and 10 of forewings free..... **Apreta.**
Third joint of labial palpi erect; veins 9 and 10 of forewing long stemmed.
Epichæta.

AMYDRIA Clem.

Dyar, List of North America Lepidoptera, p. 573.

Head rough-haired, scales of face partially rough to more or less closely appressed. Maxillary palpi rudimentary. Tongue wanting. Labial palpi strongly developed, curved, ascending, second joint with a brush, more or less dense, beneath and generally with lateral setæ; third joint rarely as long as the second, either compressed laterally or flattened. Eyes small, hemispherical, prominent. Antennæ robust, scarcely more than one-half the wing length, joints close set with verticillate scales. Forewings elliptic, apex more or less rounded. All veins present, free, vein 1*a* furcate. Hindwings as wide or wider than the forewings, oval, cilia under one half. All veins present, free; vein 1*b* furcate at base. Posterior tibiæ rough haired.

Moths of more than average size, with few exceptions. The type of the genus is *A. efrenatella* Clem., and besides *A. clemensella* Chambers, the only species heretofore described. The species now known having considerably increased in number may conveniently be arranged into three groups, as follows:

Third joint of labial palpi compressed laterally. Head more coarsely rough haired; scales of face less closely appressed, giving the front when viewed laterally a gibbous appearance. The head, viewed from above is scarcely wider than long. Tho brush of the labial palpi very dense and nearly perpendicle to the axis of the joint..GROUP I.
Third joint of labial palpi flattened; scales of face more or less closely appressed. Species ochreous, as ochreous brown, rarely—*onagrella*—gray as grayish fuscous. Dorsal margin of forewings without markings, cilia generally with dividing line, never barred; brush of first joint of labial palpi feebly developed, lateral setæ less evident.....GROUP II.

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Species gray to dark fuscous-brown. Dorsal margin of forewings with markings, cilia more or less distinctly barred. First joint of labial palpi with distinct brush and lateral setæ strongly marked ...GROUP III.

SECTION I.

The four species comprising this section may be separated as follows:

Forewings less elongate, apex broadly rounded.
Markings of forewings not confluent .....**brevipennella.**
Markings confluent.....**efrenatella.**
Forewings elongate, apex obtusely rounded.
Larger, 20-23 mm.; ground color grayish-ochreous .....**coloradella.**
Smaller, 14-15 mm.; color pale ochreous.....**arizonella.**

A. brevipennella n. sp.—Pale ochreous as bone-yellow. First and second joints of labial palpi fuscous, except apical part of latter, brush large, scarcely extending beyond end of second joint, third joint fully as long as the second, pointed, slightly compressed, thinly dusted with fuscous. Vertex and antennæ ochreous-brown, the latter rather stout. Thorax ochreous-brown, tinged with fuscous and having somewhat of a metallic lustre. Abdomen dusted with fuscous. Forewings rather wide, oval, costa evenly arched from base to apex, latter broadly rounded, pale ochreous, dusted and marked with fuscous. A large rhomboidal spot at base of costa extending to fold, another large spot at one-third, beyond the latter are two or three small dots, and beyond the middle are five costal spots, decreasing in size, the first two of these extend more or less distinctly into the disk and are connected with a large, nearly quadrate spot at the end of cell; a row of spots, more or less connected at base of dorsal cilia, immediately below the two basal spots on the costa, are two longitudinal dashes, a streak on the fold, more or less interrupted, several dots above end of fold. Cilia pale ochreous, with dark dividing line. Hindwings grayish ochreous, finely dusted with fuscous, cilia paler with well marked subbasal line. Underside of wings grayish fuscous. Body beneath and legs, silvery grayish white, anterior and middle legs strongly spotted with fuscous brown, tarsal joints pale at apex.

Exp. 14.0-15.0 mm.; 0.56-6.0 inch.

Hab.—District of Columbia, Maryland (Plummer's Island).

Numerous specimens were taken at above localities by Mr. A. Busck, who also has kindly placed several specimens in my cabinet. Quite distinct; its nearest ally is *efrenatella* Clem., which it resembles in markings, but from which it differs by the relatively shorter forewings, broadly rounded at the apex.

A. efrenatella Clem. (Dyars List, p. 573, No. 6534).—General color ochreous. Labial palpi except the third joint, dark fuscous externally, slightly so within, brush very dense, third joint pointed, distinctly compressed, scarcely as long as the second. Head, antennæ and thorax ochreous-brown, the latter fuscous anteriorly. Forewings rather wide, costa feebly curved from the base and again

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towards the apex, the latter rounded, dorsal margin more strongly curved toward the apex, dusted more or less densely with dark fuscous scales, aggregated into more or less, transverse strigulations; costo-basal part of wing dark fuscous, a row of five or six costal spots before the middle, beyond the latter are five larger costal spots, decreasing in size; a large patch at end of cell, a large irregular discal patch at one-third, another spot at one-half and one above the fold, all the larger patches more or less distinctly confluent, the first two or three larger costal spots beyond the middle are also connected with the large spot at end of cell. A row of spots along base of dorsal cilia of which the first one is usually larger and more conspicuous; veins generally darker. Cilia concolorous with broad, irregular median dividing line. Hindwings grayish ochreous; cilia with dark subbasal line. Abdomen above ochreous fuscous, anal brush ochreous, underside and legs dusted with fuscous.

Exp. 16.0 20.0 mm. 0.64-0.8 inch.

Hab.—Pennsylvania, New Jersey (Montclair, Kearfott); Massachusetts.

Probably occurs over the whole northern Atlantic district. Dr. Clemens' statement, that the male has more of the yellowish hue than the female, I cannot verify; a male specimen in my collection has the ochreous ground color almost obscured by dark fuscous scales.

A. coloradella n. sp.—Very similar in coloration and markings to *A. efrenatella* and from which it differs in the following points: Larger size; general color more brownish ochreous; labial palpi scarcely darker externally. Forewings narrower, more elongate and more pointed at the apex, markings less pronounced in color and less confluent; a conspicuous dash beneath the fold near the base, sometimes split into spots.

Exp. 20.0–23.5 mm.; 0.8–0.94 inch.

Hab.—Colorado (Denver, Durango, Co.); Arizona (St. Rita Mountains); California (Kaweah).

A. arizonella n. sp.—Face and labial palpi whitish ochreous, second joint of latter dark fuscous externally, third joint a trifle longer than the second, slightly fuscous externally, scarcely compressed. Vertex and antennæ sordid ochreous. Thorax grayish-ochreous, patagia fuscous anteriorly. Forewings elongate; costa slightly arched from the base, a little more so towards the apex, latter obtusely pointed; ground color pale ochreous, markings dark brown and almost confined to the costal half of the wing, the apical part of the wing and the subapical space conspicuously free except some small dots and marginal spots; a large patch at base of costa extending to fold, beyond this a row of spots along entire costa, subconfluent in the basal half, two of these spots at about two-thirds the wing-length are larger and connected with a spot at end of cell, beyond these are three distinct, though smaller spots; from the basal patch extends a row of irregular patches toward the spot at end of cell and between these and the costa the space is dotted with smaller spots; a row of spots along the base of dorsal cilia and around the apex. Cilia pale with darker line. Hind-

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wings grayish-ochreous. Cilia paler. Abdomen and legs grayish ochreous, more or less dusted and spotted with fuscous.

Exp. 14.0-15.0 mm.; 0.56-0.6 inch.

Hab.—Arizona (Phoenix, Hachuca).

Two specimens in my collection.

SECTION II.

The species placed in this group are distinguished as follows:

Ochreous, or dull ochreous.
  Costal spots inconspicuous.
    Larger, 22-0 mm.; ochreous brown.....**apachella.**
    Smaller, 12.0-13.0 mm.; ochreous.....**clemensella.**
  Costal spots conspicuous.
    Forming curved strigæ.....**curvistrigella.**
    Spots simple not curved.....**pandurella.**
Pale. ochreous white; spot on the fold near the base inconspicuous as wanting. **confusella.**
Gray, as grayish-fuscous; a large conspicuous spot on fold near the base. **onagella.**

A. apachella n. sp.—Pale grayish-ochreous. Brush of labial palpi more or less fuscous externally, the third joint nearly as long as the second, fuscous above and somewhat flattened. Head and antennæ dark ochreous. Thorax, especially the anterior part and patagia overlaid with purplish fuscous. Forewings elongate, of approximately equal width; ground color pale grayish ochreous with a somewhat satiny lustre and dusted more or less densely with fuscous-purplish scales, the latter strongly condensed in the costal half of base; markings ill defined, a large spot at end of cell, four or five rather large dots along base of costal and some less defined ones along base of dorsal cilia. Hindwings thinly overlaid with pale fuscous scales; cilia concolorous. Apical part of abdomen and anal brush pale fuscous. Anterior legs fuscous externally, tarsal joints paler at apex.

Exp. 20.0 mm.; 0.8 inch.

Hab.—Arizona (Williams); U. S. Nat. Mus.

Another specimen from Catal Springs, Arizona, is a little paler and has the circum apical dots of forewing a little more distinct.

A. clemensella Ch.

Mr. Chambers describes this species as follows:

"Yellow, the palpi are a little paler, except the outer surface of the second joint. Primaries with minute brown spots arranged in transverse rows; these require close observation; one spot on the fold and one on the end of the disc, a little larger than the others. Al. ex. one-half inch. There is also a row of small fuscous spots around the base of the ciliæ."

Hab.—Texas.

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I have not seen the type of this species and am not aware of its existence. Chambers refers this species doubtfully to the genus under consideration. A specimen in my collection from St. Louis, Missouri, I refer to it; the transverse strigæ consisting of small brown dots are very distinct.

A. curvistrigella n. sp.—Entirely ochreous; face paler, scales more appressed. Patagia in front slightly infuscate. Forewings elongate, very thinly sprinkled with pale brown scales, forming fine strigulations on the margins of basal half of wing and more distinct on the costal than dorsal margin; costal part of base somewhat fuscous; on the costa, beyond the middle are five or six conspicuous spots, which with the exception of first and second, form a curved line one-third across the disc, opposite to these are some small dorsal spots and between these some indistinct, transverse lines; a rather small, though distinct spot at end of cell. Cilia concolorous, dividing line indistinct. Hindwings pale grayish ochreous. Abdomen and legs slightly dusted with fuscous.

Exp. 21.0 mm.; 0.84 inch.

Hab.—Arizona, (Phoenix).

Two specimens in my collection.

A. pandurella n. sp.—Ochreous; second joint of labial palpi speckled externally with fuscous, brush projecting foreward nearly the length of third joint, the latter flattened and shorter than the second. Front smooth-scaled, pale ochreous, vertex and thorax slightly intermixed with brown. Forewings elongate, moderately pointed, thinly speckled with pale fuscous scales, costa at base, five large costal spots from middle to apex, six smaller dorsal spots along base of dorsal cilia, a large spot at end of cell, another spot midway between it and the base in dorsal half of wing, a dash below the fold at one-third, all dark fuscous. Cilia with median dividing line and speckled with fuscous in basal half; underside of wing pale fuscous, showing marginal spots. Hindwings grayish ochreous, cilia with wide subbasal line. Abdomen above somewhat dusted with fuscous, sides fuscous, underside and legs very sparsely dusted with darker scales.

Exp. 13.0-17.0 mm.; 0.52-0.68 inch.

Hab.—Arizona (Phoenix); California (Pasadena).

Two specimens, ♂ and ♀, in my collection. Smaller than the preceding and particularly characterized by the conspicuously large costal spots. From the following, *A. confusella*, with which it might be confounded, it differs by its more deep, ochreous color, its wider and less elongate forewings and the distinct discal spots.

A. confusella n. sp.—Pale ochreous with satiny lustre. Palpi slightly infuscate externally, brush rather dense and not projecting beyond joint, third joint flattened, as long as the second. Vertex intermixed with grayish. Forewings rather narrow, pointed, margins nearly straight, speckled with small brown dots, forming transverse lines more or less entire; costa at base fuscous, five dis-

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tinct costal spots from middle to apex, connected by indistinct transverse striæ with less conspicuous spots along the base of dorsal cilia; a large spot at end of cell, another spot immediately above the fold and opposite to the first costal spot, a small spot on the fold near the base. Cilia pale ochreous, dividing line indistinct, speckled with fuscous scales. Hindwings pale, cilia concolorous. Abdomen above slightly dusted with fuscous, underside of body and legs grayish white.

Exp. 13.0-17.0 mm.; 0.52-0.68 inch.

Hab.—California (Pasadena).

Eight specimens in my collection. The costal spots in some specimens appear somewhat curved and might thus lead to confusion with *curvistrigiella*, but the species under consideration is smaller, much paler and the forewings relatively narrow. In two specimens are two distinct longitudinal spots in the apical part of the wing and parallel to the dorsal margin.

A. onagella n. sp.—Ochreous-fuscous. Second joint of labial palpi ochreous within, fuscous externally, brush not projecting beyond the joint, third joint flattened, dusted with fuscous above. Head brownish ochreous, intermixed with dark fuscous on the vertex. Antennæ paler. Forewings moderately wide, costa more distinctly arched from the base and again towards the apex, the latter obtuse; general color a sordid-ochreous fuscous, the purplish-fuscous scales condensed on the basal part of the wing excepting the fold; immediately following this dark colored basal patch is a space rather free from the dark fuscous scales, after which, however, they form irregular, transverse lines, less evident in the subapical space, the first of these transverse lines is somewhat curved and ends in a large subquadrate spot at one-third of the fold; space along the costa darker, numerous, ill-defined dots on the costa before the middle, and beyond these are six or seven well-marked costal spots, the first one of which is before the middle and five or six dorsal spots along base of dorsal cilia, the two first of these are more conspicuous. A large spot at end of cell, another on the fold at about two-thirds its length, between the spot at end of cell and the base of the wing is a distinct, though smaller spot, placed midway between costa and fold. Cilia grayish fuscous with broad dividing line, underside of wing fuscous. Hindwings grayish fuscous, cilia concolorous with dark subbasal line. Thorax and abdomen above fuscous brown, anal brush paler. Underside of body and legs grayish fuscous, spotted and tinged with dark fuscous.

Exp. 13.0-0,13.5 mm.; 0.52-0.54 inch.

Hab.—Kansas (Onaga)

Two male specimens in my collection. In its general dark coloration this species approaches the next section of the genus.

Var. **occidentella.**

Specimens in my collection from Pasadena, California, agreeing with the above in size and markings and yet present differences

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which eventually may prove these to be distinct, but which for the present I prefer to consider as varietal only; they differ from the typical form as follows: general color a paler gray; the spot at one third of the fold less conspicuous and particularly by the narrower and more pointed forewings. Another specimen in my collection from Mountain View, California, I also refer to the variety under consideration, it is of a grayish fuscous color with some lustre; all the wing markings obscure, except the spot at end of cell and four or five costal spots.

SECTION III.

But three species belong here: they are aberrant in general appearance and markings of forewings and may readily be distinguished as follows:

Forewings with four fascias ..... **obliquella.**
Forewings without fascias.
Dark fuscous, without conspicuous costal spots ..... **Dyarella.**
Ground color grayish-white; four large costal spots ..... **margoriella.**

A. obliquella n. sp.—Brush of first and second joints of labial palpi dense and long, dark fuscous externally and sprinkled with dark brown scales, third joint flattened, a little longer than the second joint, fuscous in basal half externally; the first two joints with a few long, blackish lateral setæ. Head sordid white, scales loosely oppressed. Thorax sordid white, speckled with small brown dots, patagia and four spots on the anterior margin dark brown. Forewings moderately wide, elongate elliptic, apex broadly rounded; ground color sordid ochreous white, sprinkled with brown scales and marked with deep seal-brown as follows: costa at base, from which extends a narrow oblique streak, which reaches the dorsal margin where it expands into a triangular spot, a fascia at one-third, moderately wide, extends obliquely until it reaches the fold, thence perpendicularly to and attaining the internal margin, another fascia at two-thirds extends obliquely backwards and forms a quadrate spot which extends back a little but does not reach the dorsal margin, this quadrate spot encloses another almost blackish spot on the transverse vein; just before the apex is a transverse spot extending half across the wing and somewhat bifurcate on the margin, between this spot and the preceding fascia are one or two smaller costal dots. Cilia sordid white, costal part barred with dark brown, the dorsal portion with two irregular dividing lines and spotted with dark brown. Hindwings and cilia fuscous brown. Underside of wings fuscous. Abdomen above, underside of body and legs grayish, with more or less fuscous dusting; apical half of tarsal joints paler.

Exp. 13.0-16.5 mm.; 0.52-0.66 inch.

Hab.—California (Pasadena); two specimens in my collection. (Los Angeles), specimen in U. S. Nat. Museum.

A very distinct species, unlike any other known to me.

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A. dyarella n. sp.—Pl. I, fig. 1.—Grayish to dark fuscous. Labial palpi and lateral setæ dark fuscous, brush of second joint and the third joint dull ochreous, the latter flattened with a dark spot beneath and dusted with fuscous above. Face ochreous white. Vertex brownish, intermixed with white anteriorly. Thorax brown, patagia paler. Forewings moderately wide, costa evenly arched from base to apex, latter broadly rounded; grayish fuscous, spotted with seal-brown as follows: three transverse costal spots near the base, the first and third most distinct, these spots extend as interrupted lines to the dorsal margin, beyond these spots are a number of ill-defined costal spots, becoming a little more distinct towards the apex where they extend as dark lines into the paler cilia; immediately before the middle of the dorsal margin is a conspicuous inverted triangular spot resting with its apex on the margin, obliquely above it and nearer the base is another spot; besides these are smaller, mostly transverse spots, especially in the apical part of the wing; the larger spots on the disk and dorsal margin are more or less distinctly margined with yellow scales. Dorsal cilia grayish fuscous, barred with darker lines. Hindwings fuscous brown, with a faint, purple lustre. Underside of wings fuscous brown. Abdomen above dark ochreous fuscous, underside of body and legs grayish, tinted with fuscous.

Exp. 13.0-15.5 mm.; 0.52-0.58 inch.

Hab.—Pennsylvania (Hazleton); Maryland (Plummers Island).

The specimen which has served as the type for the above description has been taken by me at electric light. Two specimens received from M. A. Busck and taken at the last-mentioned locality, differ from the type in being darker, wing markings less distinct and the yellow scales margining the large spots very sparsely present. It gives me pleasure to dedicate this species to Dr. Dyar.

A. margoriella n. sp.—Pl. III, fig. 5.—First joint of labial palpi entirely and the second externally fuscous brown, the latter within, the brush anteriorly and the third joint pale ochreous, the latter with an indistinct fuscous dot in the middle of underside. Head ochreous, intermixed with brown. Antennæ ochreous brown, paler at base. Thorax ochreous, speckled with and patagia anteriorly, fuscous. Forewings moderately wide, arched from the costa and again towards the apex, latter obtusely rounded; sordid ochreous, as grayish white, irrorated and conspicuously spotted with dark brown, four spots on the costa, the first near the base is oblique, somewhat interrupted and reaches the fold, the second spot at less than one-third, a large oval spot beyond the middle and a large subquadrate spot before the apex; a large spot on the fold at one-half the wing length, a large spot on the dorsal margin near the base; another, less conspicuous, at beginning of dorsal cilia; besides these are numerous dots and transverse streaks of a paler color, veins dark; a small, but distinct, spot at end of cell and on costa between third and fourth spot. Cilia pale ochreous, barred with five or six dark lines, the last costal spots extends into the cilia. Underside pale fuscous, showing somewhat the markings of upper side. Hindwings grayish, dusted with fuscous, cilia concolorous. Abdomen above grayish fuscous; underside of body and legs grayish ochreous, dusted with fuscous; anterior tarsi, except joints at apex, dark fuscous.

Exp. 11.0-16.0 mm.; 0.44-0.64 mm.

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Hab.—Texas (San Antonio); Kansas (Lawrence); Florida.

My own and U. S. Nat. Mus. collection. The smaller sized specimens have more of the grayish white, the larger the ochreous white color. A very distinct and well-marked species. Named after my daughter Margorie.

PARAPLESIA gen. nov.

Type *Busckiella.*

Differs from the other genera of this group by the bipectinate antennæ of the male, the latter inserted in the centre of the upper orbital margin; first joint with well-marked pecten. Head and face rough haired. Forewings elongate; all veins present, veins 7 and 8 out of 9. Hindwings wider than the forewings, all veins present; parting vein of cell forked. Legs long and slender. Hind tibiæ rough haired.

A single species; the type of the genus.

P. Busckiella n. sp.—Pale ochreous. Labial palpi moderately long, porrect, slightly ascending, second joint dusted with fuscous, except on the upper side, with black, lateral setæ, third joint flattened, two-thirds the length of the second, with a few scattered fuscous scales. Head rough haired, yellowish white. Antennæ yellowish fuscous, pecten of first joint long, fuscous, joints closely set. Middle of thorax creamy yellow, with a few scattered fuscous scales, patagia densely dotted with fuscous anteriorly. Forewings pale ochreous, rather densely and evenly overlaid with fuscous scales, without lustre, a row of ill-defined, darker spots along the costal margin, becoming larger and more distinct around the apex; along the fold and also in the apical half of the interspaces between veins 4, 5, 6 and 7 the darker scales are deficient, giving thus a peculiarly marked appearance, the paler spaces containing some deep ochreous scales; there are also one or two ill-defined longitudinal lines through the centre of the wing, the space between these is also paler. Cilia greyish, with scattered fuscous scales; underside grayish fuscous. Hindwings pale greyish, with a faint metallic lustre. Cilia concolorous. Abdomen grayish fuscous above; underside of body silvery gray, dusted with fuscous. Anterior and middle tibiæ and tarsi pale fuscous, joints of latter pale at apex, hind legs pale, scarcely dusted with fuscous.

Exp. 18.0 mm.; 0.72 inch.

Hab.—Catal Springs, Arizona.

A single male specimen from the U. S. Nat. Mus. collection is before me.

PARANEURA.

Type *simulella.*

Labial palpi ascending, second joint roughened beneath with scales, not flattened, third joint approximately as long as the second, slender, pointed, not flattened. Head not wider than long, face

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smooth scaled, occiput rough haired. Antennæ slender, simple, nearly as long as the forewing, first joint without pecten. Forewings rather wide, all veins present, veins 5 and 6 out of one point, 7 out of 8; on accessory cell 1^b furcate. Hindwings ovate, as wide or wider than forewings, with 8 veins; 5 and 6 stemmed, 1^b narrowly furcate at base.

In general appearance the species resemble those of the first group of *Amydria*.

The three species are distinguished as follows:

Ground color of forewing ochreous.
Base of forewing not entirely purplish brown; wings less elongate. **simulella.**
Base of forewings purplish brown; wings more elongate. **Ehrhornella.**
Ground color of forewing bony-white ..... **cruciferella.**

P. simulella n. sp.—Sordid ochreous. Labial palpi, except second joint within, dusted with fuscous. Face with a faint pearly lustre. Antennæ pale fuscous above. Thorax anteriorly fuscous brown. Forewings moderately wide, obtusely pointed at apex, costa equally curved from base to apex, thinly dusted and spotted with purplish fuscous brown, base of costa and dorsal margin dark brown, a row of small dots on basal half of costa, beyond these are three larger spots, the middle of which is the smaller, in the apical part are three or four spots extending as lines into the costal cilia; a longitudinal dash at one-third and another at two-thirds of the fold, the latter being the most marked. A large irregular blotch at end of cell, and before it at two-fifths another though somewhat smaller spot on the disk; two short, parallel dashes in apical part of wing; along base of dorsal cilia is a row of semi-confluent dots and some similar though less distinct spots along the free dorsal margin. Cilia concolorous, speckled with fuscous scales. Hindwings obtusely pointed, ochreous fuscous, cilia concolorous, with indistinct subbasal line. Underside of wings pale, grayish fuscous, Abdomen above ochreous fuscous, underside of body and legs dusted with fuscous; tarsal joints pale at apex.

Exp. 18.0–25.0 mm.; 0.82–1.0 inch.

Hab.—California (Folsom; Los Angeles).

Two specimens before me.

P. Ehrhornella n. sp.—Smaller than *simulella*, wings narrower, more acutely pointed at the apex, especially the hindwings. Ochreous; palpi more deeply fuscous externally. Vertex ochreous fuscous. Antennæ fuscous brown above. Thorax dotted with fuscous. Forewings elongate, conspicuously marked with purplish brown as follows: Base entirely, except a minute dot at extreme base of fold, five or six irregular transverse spots on basal half of costa; beyond these three larger rounded spots, of which the middle one is smaller, four costal spots in the apical part extending as oblique lines into the cilia; on and immediately above the fold are three quadrate, well-defined spots, separated by the

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rather clear, ochreous ground color; a large irregular spot on the disk at two-fifths, another at end of cell, and a third in the apical part of the wing. these three spots are in a line, and the first and second are more or less distinctly connected with the supra-plical spots; besides these larger spots the wing is densely speckled with brown scales and dots, especially in basal half of wing; a row of more or less connected dots along base of dorsal cilia, latter speckled and irregularly barred with dark fuscous. Hindwings dusted with fuscous, darker along the margins. Cilia concolorous, with dark subbasal line. Abdomen grayish fuscous above. Underside of body and legs silvery gray to ochreous, slightly tinged with fuscous, tarsal joints paler at apex.

Exp. 19.0–22.0 mm.; 0.76–0.88 inch.

Hab.—California (Mt. View).

It gives me pleasure to dedicate this species to Mr. Edward Ehrhorn, from whom the specimens were received.

P. cruciferella n. sp.—Bony or sordid white. Labial palpi spotted above with fuscous. Head ochreous white, somewhat shining. Antennæ of moderate thickness, annulate with brownish above. Patagia purplish brown in front, thorax finely speckled with scales of same color. Forewings moderately wide, irregularly narrowed from both margins to apex, the latter obtusely pointed; sordid white, thinly sprinkled with pale brown scales and conspicuously marked with dark brown; extreme costa and costal part of base, a row of partially confluent dots on basal half of costa, beyond middle three larger spots, the middle one being the smaller, three distinct, closely approximated spots on costa in its apical part and extending into the cilia, a row of 7 or 8 rather large spots along base of dorsal cilia and extreme apex; several spots in basal part of wing, a heavy dash towards end of fold somewhat connected with the first spot at beginning of dorsal cilia; a conspicuous cruciform spot at end of cell, the two bars of which are oblique to the longitudinal axis of the wing, a dash on the disk before the middle; basal part of dorsal margin blackish; two oblique dashes in apical part, conjoined below. Cilia concolorous, with indistinct darker lines extending from the dorso-marginal spots. Hindwings grayish, with ochreous tinge and dusted with fuscous and darker around the margins. Cilia grayish. Underside of forewings shows the markings of upper side more or less distinctly. Abdomen sordid ochreous, tinged with fuscous, segments with a scale tuft each side. Underside of body ochreous, with a silvery lustre. Anterior legs tinted with fuscous brown, posterior less so.

Exp. 20.0 mm.; 0.8 inch.

Hab.—California (Mt. View).

Two males in my collection.

SETOMORPHA Zell.

Type *rutella* Zell., Dyar List, p. 575.

"Head densely scaly, scales clearly appressed. Labial palpi moderately well developed, ascending, flattened; second joint thickened with scales beneath and with some spreading setæ externally; ter-

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minal joint strongly flattened, obtuse or truncate at apex. Maxillary palpi obsolete. Tongue wanting. Ocelli none. Antennæ setaceous, as long or a little longer than the abdomen, basal joint thickened, outer joints short, close set, scarcely pubescent in the male. Legs moderate; spines of posterior tibiæ a little before their middle. Ovipositor exserted. Wings narrow; hindwings as wide or but little narrower than the forewings, lanceolate; cilia of moderate length."

The above is a translation of Zeller's description of the genus, published in 1853. In his "Mittheilungen zur Kenntniss Nordamerikanischer Nachtfalter, 1873," the same author described three species from Texas under the same generic name, and where he also refers to the doubtful position of this "smooth headed" genus and that perhaps the neuration or primary stages might throw light on this point.

In his "Micro lepidoptera from Africa,"* Lord Walsingham describes the neuration and gives figures of the same and also of head of the type of the genus *Set. rutella* Zell., which is as follows:

Forewings 12 veins, 7 and 8 arising from a common stem out of 9, 7 to apex; 5 and 6 slightly curved, parallel, 3 and 4 from a short, common stem; 2 from near angle of cell, curved at origin; hindwings 8 veins, 2–3 from a point at angle of cell; 5 and 6 from common stem, 6 to apex.

This, then, renders our conception of the genus concise. The figure of the head in Lord Walsingham's paper does not tally with the description, as it appears anything but smooth scaled. Now, in accordance with the above, none of the three North American species described by Zeller can any longer be retained here and have therefore been referred to the new genus *Semiota*.

But two species are known to me which agree in venation and all other essential characters and which are distinguished as follows:

Larger, 20 mm. and over; hindwings obtusely pointed ..... **majorella.**
Smaller, 14 mm.; hindwings acutely pointed ..... **sigmoidella.**

S. majorella n. sp.--Sordid ochreous, with a satiny lustre. Second joint of labial palpi externally and third above and beneath spotted with fuscous. Head dull ochreous brown, occiput somewhat rough haired. Antennæ slender (♀), three-fourths the length of forewing; slightly annulate with fuscous above. Thorax speckled with purple-brown dots, more densely anteriorly. Forewings of moderate width, sprinkled with purple-brown scales, aggregated in

* Trans. Ent. Soc. Lond., 1901, p. 81, pl. vii, fig. 73.

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numerous spots and irregular transverse lines; extreme costa near the base, a row of small dots in basal half, and 6-7 larger spots on distal half of costa, a similar row of rather large spots along base of dorsal cilia. Cilia speckled and barred with dark brown, proceeding from the marginal spots. Hindwings grayish, slightly fuscous, cilia more ochreous. Abdomen above, body beneath and legs grayish ochreous, dusted with fuscous; tarsi fuscous, joints pale at apex.

Exp. 20.0-22.5 mm.; 0.8-0.9 inch.

Hab.—California (Pasadena).

Two female specimens in my collection. In venation this species differs in veins 5 and 6 of forewing straight, 7 to costa before apex; hindwings with vein 2 remote from hind angle of cell, 3 and 4 closely together from the latter; differences scarcely sufficient to remove it from the genus.

P. sigmoidella n. sp.—Smaller than the preceding species. Sordid ochreous, with very little lustre. Second joint of labial palpi externally and beneath fuscous. Head dull ochreous. Forewings rather narrow, speckled and spotted with purple-brown, costa at base, a row of small dots on costa before the middle, 6 or 7 larger spots from middle to apex, a row of confluent spots along base of dorsal cilia; a dash at end of cell and a large spot near end of fold connected by a double curved line, giving thus a sigmoid figure; a large spot near the apex; besides these are numerous discal spots, more or less connected into transverse lines. Cilia speckled with dark scales. Hindwings acutely pointed at apex, grayish, dusted with fuscous; cilia stramineous. Abdomen above, body beneath and legs grayish, tinged with yellowish.

Exp. 14.0 mm.; 0.56 mm.

Hab.—Colorado (Pueblo, Glenwood Springs).

Four males in my collection. Differs in venation from *majorella* by veins 3 and 4 of hindwing remote at their origin.

EPILEGIS gen. nov.

Type *cariosella.*

Second joint of labial palpi slightly thickened beneath with scales, not flattened, third joint flattened. Head rather large, globose, smooth scaled, slightly roughened on the occiput. Eyes large, hemispherical, quite visible from above. Antennæ somewhat thickened towards the base, nearly as long as the forewings. Forewings rather wide, apex obtuse; 11 veins, veins 7 and 8 out of 9; 1*b* furcate. Hindwings ovate, all veins present, veins 3, 4, 5 and 6 approximate at their origin; 1*b* furcate.

Habitus of *Semiota*, but wings relatively wide and head large. At once distinguished from it and allied genera by veins 5 and 6 of hindwings free.

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E. carlosella n. sp.—Grayish ochreous. Palpi beneath fuscous. Head tinged with brown, especially above the eyes. Antennæ brownish above, finely annulate with pale. Patagia entirely and rest of thorax speckled with purplish brown. Forewings speckled with purplish brown, very near the base is a transverse band with ill-defined outline, and from it the dark coloration extends along the fold for two-fifths its length, near the end of fold is another patch; in the middle of the wing, beginning at three-fifths its length, is a heavy longitudinal stripe extending to but not quite attaining the apex; along both margins are a number of larger and smaller spots, one at three-fifths of the costa more conspicuous, and other spots scattered over the disk. Cilia pale ochreous. Hindwings pale grayish, tinged with ochreous; cilia pale. Abdomen brownish ochreous, apical half of segments paler. Underside of body bright yellowish. Legs grayish ochreous, tibiæ and tarsi tinged and spotted with dark fuscous.

Exp. 14.0 mm.; 0.56 inch.

Hab.—California (Kaweah).

Two males in my collection.

APOTOMIA gen. n.

Type *fractiliniella.*

Agrees with *Semiota* in palpal structure; head smooth scaled. Antennæ three-fourths of wing length. Forewings moderately wide; neuration as in that genus, except that veins 5 and 6 are stalked. Hindwings over 1 ovate, obtusely pointed; 7 veins, 5 and 6 stemmed, 1^b furcate. In appearance the single species differs in wing markings from *Semiota.*

A. fractiliniella n. sp.—Pl. I, fig. 2.—Labial palpi whitish ochreous, the second joint moderately thickened with scales beneath and spotted with fuscous externally, third joint flattened, as long as the second. Head pale ochreous, tinged with brownish, with some lustre. Antennæ grayish ochreous, annulate with brown above, the two basal joints paler. Thorax whitish ochreous, patagia more yellow and slightly spotted with brownish anteriorly. Forewings pointed, sordid white, overlaid with pale ochreous and having considerable lustre, speckled with brown scales and small dots; an indistinct, subangulate line beginning about middle of costa and extends almost at right angle to fold, thence outwardly to near its end when it is deflected obliquely to the dorsal margin; base of costa, six or seven rather large costal spots beyond the middle, three or four similar spots on the dorso-apical margin and a large spot on end of cell dark brown. Cilia concolorous, speckled with brown scales. Hindwings pale grayish white, slightly dusted with fuscous. Cilia pale yellow. Abdomen and legs sordid ochreous white, with some fuscous scales, especially on tarsal joints.

Exp. 17.0 mm.; 0.68 inch.

Hab.—California (Pasadena).

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SEMIOTA gen. n.

Type *inamœnella*.

Head as wide as long; scales appressed, occiput rough haired. Second joint of labial palpi not obviously flattened, roughened with scales beneath and with lateral setæ; terminal joint ascending, flattened, obtusely pointed. Eyes rather small, but slightly visible from above. Antennæ setaceous, nearly as long as the forewings, simple. Forewings lanceolate; 11 veins, 7 and 8 out of 9, 1^b furcate. Hindwings ovate-lanceolate, as wide as the forewing; cilia 1; 7 veins, vein 2 remote from angle of cell, 5 and 6 stalked, 1^b narrowly forked at base.

The reasons for establishing this genus have been noted under *Setomorpha*. The three species recognized are distinguished as follows:

Larger, 18.0 mm.; forewings wider; transverse lines near base extend from costa to dorsum .... **operosella.**

Smaller, 10.0–15.0 mm.; forewings elongated, pointed at apex.

Pale ochreous; without transverse lines in apical part of wing. **inamœnella.**

Ochreous brown; transverse lines in apical part of wing. **transversestrigella.**

S. operasella Zell.—Dyar's List, p. 575. No. 6549.

The author describes this species as follows:

"Alis ant. oblongis, dilute luteis, fusco-nebulosis, costa fusco-punctata et postice-maculata. ♀.

"Thorax pale ochreous, dusted with brown, patagia pale, brown anteriorly. Head grayish, dusted with fuscous; antennæ with close-set joints, pale brown, somewhat shining; first joint brown, yellowish at the apex. Labial palpi strongly flattened, pale yellowish above, second joint brown beneath, with several bristles on the sides, third more than one-half longer than the preceding, narrower, obtuse at apex and almost entirely pale yellowish. Femora and trochanters of anterior legs gray, tibiæ and tarsi brown, former spotted with white, apices of tarsal joints paler, posterior legs sordid pale yellowish gray, tibiæ rough haired; feet shining, pale gray externally, joints broadly pale at their ends. Abdomen gray above, whitish beneath, rather robust, long, acuminate with long ovipositor.

"Forewings four lines long (about 8.0 mm.); apparently widened by the cilia, rounded at the apex, pale ochreous, with blackish brown dusting, the latter forming a pale shading near the base and a strong though not sharply defined dash on the fold before its middle; in the middle of the disk above the outer third of the fold are several confluent, longitudinal stripes; several spots on the internal margin; on the basal half of costa are eight unequal dots, on the distal half six less approximate, the four last of these extend into the cilia. Cilia yel-

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lowish gray, strongly speckled with dark brown scales in their larger basal half, the smaller distal half with ill-defined square dots. Hindwings pale gray, with yellowish cilia. Underside of forewings dark grayish fuscous. Cotal cilia paler."

Exp. 18.0 mm.; 0.72 inch.

The type, a female, in excellent condition is in the Cambridge Museum. Zeller's description, while very minute, does scarcely convey a concise idea, the heavy dash on the fold consists of several transverse patches, which reach the inner margin and are more pronounced on the fold; the longitudinal dashes or stripes on the disk are oblique, curved and nearly confluent on the fold, the cilia strongly barred with dark fuscous, the bars broken by post median dividing line.

Hab.—Texaz (type); a ♂ specimen in my collection from Kansas I refer without hesitation to this species.

S. inamœnella Zell.—Dyar's List, p. 575, No. 6550.

"Parva, alis ant. oblongis, dilute luteis, fusco-maculatis, infra costam puriori-bus, costa tota fusco-maculata, maculis postice sensim magoribus. ♂.

"Agrees in habitus and general coloration with *operosella*. Abdomen slender and relatively short, pale yellowish gray. Forewings two lines long, somewhat wider posteriorly, with the same ground color as in *operosella*, but sprinkled more profusely with larger dark brown scales which form larger spots; the latter more pronounced upon the larger dorsal half of the wing, but are so irregular in shape and more or less confluent as to permit of no concise description; the space immediately below the costa is less clouded by the darker scales; the costal spots begin at the base and increase in size as well as in interspace between them towards the apex, and are mostly acuminate inwardly; the inner margin is here and there interrupted, dark brown (a character entirely wanting in *operosella*); cilia thickly sprinkled with brown scales, the latter forming ill-defined quadrate spots. Hindwings relatively wider than in *operosella* but shows no appreciable difference in coloration from the last-named species."

Exp. 10 0 (—11.0 mm. *ruderella*).

The above description, translated from the original, agrees well with the type in the Cambridge collection. However, a critical examination of the type of this species and that of *Set. ruderella* Zell. leaves no doubt in my mind of their identity. The difference in length and thickness of the labial palpi is scarcely appreciable, the absence of lateral setæ of the second joint in *ruderella*, merely accidental, and the rather large spot in the middle of dorsal margin, a too variable character to depend upon for differentiation.

Hab.—Texas, type and specimen in collection at the Academy of Natural Sciences, Philadelphia, and my own.

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S. transversestrigella n. s.—Grayish to brownish ochreous. Palpi dusted with fuscous. Head more brownish, lustreless. Thorax overlaid with purple brownish, patagia darker in front. Forewings narrow, elongate, pointed, more grayish ochreous, sprinkled with brown scales; a row of rather large spots along the entire costal margin, less sharply defined and more irregular in the basal half, more conspicuous and distinct in apical half, these spots extend as transverse lines, more or less interrupted across the wing and reach the dorsal margin, where, however, they become less distinct, these lines are more evident in the apical part of wing, the interspaces between them being more densely sprinkled with dark scales, the latter being rather scant in the subplical space. Cilia densely sprinkled with purple-brown scales, the dark color being interrupted by several pale lines. Hindwings elongate, pointed, grayish fuscous, cilia concolorous. Abdomen and legs ochreous fuscous, tarsi spotted with dark brown. Exp. 12.0-15.0 mm.

Hab.—Calif. (Pasadena); a number of specimens in my collection.

Wings more elongate than in either of the two preceding species, and darker in coloration than *inamœnella.*

APRETA gen. n.

Type *paradoxella.*

Labial palpi short and very robust, porrect, first joint truncate, with a few setæ beneath, the second scarcely longer than wide anteriorly, obliquely truncate antero-inferiorly, the truncature clothed with short, bristly hair, the third joint half as long on its upper surface than the preceding one, oval, flattened, depressed, with short stiff hairs projecting from its anterior margin. Head, viewed from above, very short, transverse, smooth scaled, posterior margin with a whirl of stiff hair each side; front receding beneath. Eyes small, hemispherical. Antennæ as long as the forewing, very slender, first joint strongly, the second slightly incrassate. Forewings elongate, pointed; costa slightly curved from the base; 12 veins, vein 2 from posterior angle of cell, 7 and 8 stemmed, 1^b furcate. Hindwings elongate-ovate, pointed, 8 veins, vein 2 from posterior angle of cell, parting vein of latter bifurcate, veins 5 and 6 out of one point, 1^b strongly furcate; frenum absent. Legs stout, tarsal joints with a verticel of spinules of unequal length at their apical extremity, most strongly developed on the posterior, less so on the middle and scarcely perceptible on the anterior feet.

The genus thus defined presents characters peculiarly unique and striking, and could not be confounded with any other of the group. In habitus and tarsal structure it agrees well with the following, but differs in palpal structure and venation.

But one species known to me.

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A. paradoxella n. sp.—Ashy gray, with a silvery ochreous lustre. Palpi somewhat brownish beneath. Front shining, silvery yellowish. Thorax slightly dusted with fuscous. The forewings in oblique light have a brassy reflection, lightly dusted with fuscous, more so in basal part of wing; costa at base brownish; dusting more dense along base of circum-apical cilia, the latter grayish brown, sparsely sprinkled with fuscous scales. Hindwings silvery gray, cilia ochreous gray. Abdomen above tinged with fuscous, particularly on the sides. Underside of body and legs ochreous white, shining, somewhat dusted with fuscous; spinules of tarsal joints ochreous.

Exp. 16.0 mm.; 0.64 inch.

Hab.—California (Pasadena).

A unique male in my collection.

EPICHÆTA gen. n.

Type *nepotella*.

Labial palpi curved upwards, first joint with several bristles beneath, second joint incrassate with long lateral setæ, obliquely truncate anteriorly, truncature with stiff, spreading hairs, third joint about as long as the second, semi-ascending, flattened, under surface with coarse stiff bristly hairs, which project brush-like beyond its distal end. Head and antennæ as in the preceding. Forewing elongate, pointed; all veins present, veins 7 and 8 stemmed, 9 and 10 with very long stem, 1^b furcate. Hindwings elongate ovate, pointed. All veins present, free, 1^b strongly furcate; frenum absent.

Represented by one species.

E. nepotella n. sp.—Palpi deep ochreous, brownish externally. Head and basal joint of antennæ yellowish brown, the latter more predominant in the occipital whirl of hair. Antennæ pale grayish ochreous. Thorax leaden-gray, with a faint, greenish, metallic lustre. Forewings yellowish leaden, with metallic lustre, and thinly speckled with pale fuscous scales, the latter more aggregated in the apical part of wing; extreme costa fuscous; beyond the middle and within the costal margin is a rather large, but obscure fuscous spot and three or four spots on the apical part of costa, a spot at end of cell and another beneath it near the end of fold, some obscure dots along base of dorsal cilia. Cilia grayish ochreous. Abdomen above ochreous fuscous. Underside of body and legs grayish yellow, dusted with pale fuscous.

Exp. 14.0 mm.; 0.56 inch.

Hab.—California (Pasadena).

Two specimens in my collection.

Subfamily TINEINÆ.

Head entirely rough haired, more rarely those of front, subappressed. Tongue developed (except *Tenaga*), of moderate length

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(very short, *Tineola*). Maxillary palpi well developed, polyarticulate, filiform, generally 6 jointed and plicate; more rarely (*Xylesthia, Abacobia*), 3-4 jointed and porrect; entirely rudimentary in *Tineola* and *Tenaga*. Labial palpi variable, generally porrect and somewhat drooping, with spreading apical and some lateral setæ; more rarely (*Scardia, Xylesthia, Abacobia*), ascending and the second joint with a dense or loose brush of stiff hairs beneath. Antennæ filiform, variable in length, generally over one-half; rarely (*Triptodema*) as long as the forewing, glabrous, or finely pubescent in the male, rarely (*Phryganeopsis*) ciliated in both sexes, or in the male only (*Incurvaria, Cyone*); first joint not dilated into an eye-cap, rarely with pecten. Wings equally developed in both sexes. Forewings varying from oval to elongate-lanceolate, with 12 or 11 veins, vein 7 to costa more rarely to apex. Hindwings oval to lineo-lanceolate, 7 or 8 veins; vein 1^b simple (shortly furcate in *Breckenridgia*). Posterior tibiæ generally rough haired.

This subfamily contains some of the largest as well as some of the very small species of the superfamily Tineina.

The genera may be tabulated as follows:

Labial palpi ascending; second joint with stiff hair brush beneath.
Maxillary palpi plicate; hair brush compact.....(1) **Scardia.**
Maxillary palpi porrect, not plicate; hair brush loose, spreading.
Forewings with scale tufts.....(2) **Xylesthia.**
Forewings without scale tufts.....(3) **Abacobia.**
Labial palpi porrect or drooping, more rarely ascending; second joint without brush beneath, generally with spreading apical bristles.
Vein 1*b* of forewings furcate at base.
Forewings with vitreous spot, veins 3 and 4 stalked..... (4) **Monopis.**
Forewings without vitreous spot, veins 3 and 4 free.
Forewings with veins 10, 11 and 12 concurrent.....(5) **Trichophaga.**
Forewings with these veins normal.
Forewings with 12 veins, free, or 7 and 8 stalked
Labial palpi long, porrect, entirely rough haired.
(6) **Phryganeopsis.**
Labial palpi moderate, terminal joint not rough haired.
Antennæ of male ciliated.....(7) **Incurvaria.**
Antennæ of male simple.
Maxillary palpi developed, plicate.....(12) **Tinea.**
Maxillary palpi obsolete..... .....(14) **Tineola.**
Forewings with 11 veins.
Veins free.
Antennæ ciliated..... ..... (8) **Graya.**
Antennæ simple.....(10) **Breckenridgia.**
Veins not all free.

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Veins 7–8 and 9–10 stalked.....(18) **Eudarcia.**
Veins 4–5 and 6–7 stalked .....(19) **Progona.**
Vein 1*b* of forewing not furcate.
Antennæ of male ciliated .....(9) **Cyane.**
Antennæ simple in both sexes; at most, pubescent in the male.
Anterior median of hindwings concurrent with vein 8.
(11) **Isocorypha.**
Anterior median normal.
Forewings with 12 veins.
Forewings with veins 6 and 7 out of 5.....(13) **Homostinea.**
Forewings with all veins free.
Cell of hindwings open.
Antennæ as long as the forewing.....(17) **Triptodema.**
Antennæ shorter than the forewing.
Hindwings lanceolate, costa scarcely emarginate.
(16) **Hybroma.**
Hindwings lineo-lanceolate, costa distinctly emarginate.
(21) **Leucomele.**
Cell of hindwings closed.....(20) **Homosetia.**
Forewings with 11 veins.
Maxillary palpi obsolete .....(15) **Tenaga.**
Maxillary palpi developed, plicate.....(22) **Œneo.**

SCARDIA Tr.

Dyar, List of North American Lepidoptera, p. 568.

Head rough haired. Labial palpi long, curved and ascending, second joint with dense hair brush beneath, terminal joint long and pointed. Maxillary palpi curved, drooping. Antennæ one half to two-thirds of wing length, ciliated in the male; basal joint with pecten. Forewings with 12 veins; vein 1*b* furcate at base. Hindwings as wide as the forewings, elongate oval, cilia one half. All veins present. Hind tibiæ rough haired.

This genus, which, according to Mr. Meyrick, is nearly cosmopolitan, contains only a small number of species, some of which, however, are among the largest of the Tineidæ with polyarticulate maxillary palpi. The same author* describes the latter organs as short and porrected, this I could not verify in any of ours nor in the European species, which I have seen; they are rather long, filiform and curved downward, except in *coloradella*, where they are short, thickened with scales and partially plicate.

The species may be arranged in two natural groups as follows:

* Handbook of British Lepidoptera, 1895, p. 778.

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GROUP I.

Larger, more robust species; ground color of forewings dark purple brown.

Cilia of antennæ under 1; pale dorsal portion of forewing speckled with dark fuscous..... .....**anatomella.**
Cilia of antennæ 2; pale dorsal portion of forewings immaculate.
coloradella.

GROUP II.

Generally smaller and less robust than those of Group I. Ground color of forewings pale or brownish ochreous:

Transverse vein of forewings blackish above.
With transverse fascia.
Forewings broader; fascia angulated externally.....**fuscafasciella.**
Forewings elongate; fascia convex externally .....**tessulatella.**
Without transverse fascia.....**buskerella.**
Transverse vein not blackish above.....**approximatella.**

S. anatomella Grote.—Dyar's List, 568, No. 6474.—Head ochreous, pale fuscous on the sides. Labial palpi dark brown, second joint at base and apex within and terminal at base and apex pale ochreous. Maxillary palpi pale fuscous, base and tip ochreous; antennæ dark brown, cilia of male very short, under 1. Thorax dark brown anteriorly, mixed with ochreous on the disk, posterior part of patagia pale yellow. Abdomen grayish, mixed with fuscous. Forewings elongate, rounded at the apex, deep purple-brown; four pale, H-shaped spots on the costal margin, two of these are before and two behind the middle, the last one of these incomplete; terminal part of wing pale, projecting almost squarely into the dark ground color between veins 5 and 7, and irrorated with dark, transverse strigæ; a dark spot at end of interspace between veins 5 and 6; dorsal margin pale, the latter dilated at the anal angle, before the middle, and again at the beginning of the dorsal cilia, and transversely strigulate with dark brown; the projections at the middle and at beginning of cilia contains each a distinct, dark spot. Cilia pale yellow, with dark dividing line about the middle and transversed by about seven or eight dark bars, the widest of which is before the apex. Underside of wing fuscous, tinged with purple and showing the pale markings of the upper side, though less distinct along the dorsal margin. Hindwings grayish fuscous, with a feeble, purple lustre. Cilia less than ½ pale gray in their basal half, whitish apically. Anterior and middle legs dark brown; apex of tibiæ and tarsal joints banded with pale yellow; hind legs paler.

Exp. 25.0-26.0 mm.; 1.0 inch.

Hab.—Northern Illinois; Texas (Harris County); Utah (Salt Lake City); New York.

Closely resembles the European *S. polypari*, but is smaller, the number of geminate costal streaks is less and lacks the pale spot at end of cell.

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S. coloradella n. sp.—Head ochreous, brownish above the antennal insertion. Labial palpi rather slender, yellowish gray, pale fuscous externally, apex of terminal joint pale; brush of second joint very short, compressed into a cutting edge, the third joint nearly as long as the second and slender. Maxillary palpi rather short, thickened with scales and more distinctly folded; dusted with fuscous. Antennæ scarcely one-half, pale ochreous, joints not close set, each with a whirl of dark brown scales, giving them a distinct annulate appearance, strongly fasciculate-ciliate in the male, cilia fully 2. Thorax pale yellow, patagia anteriorly and disk speckled anteriorly with dark brown. Forewings deep purple-brown, markings yellowish white; a number of short transverse strigæ on the costa, of which two or three in the last third of the dark part are more distinct than the rest. Apical part of wing and termen broadly pale yellow, this pale portion is widest on the costa and slightly sinuate into the dark portion, irrorated with dark spots and two or three short, confluent spots on the costa before the apex. The pale dorsal portion is widest at the base and projects as a triangle into the dark portion about the middle and again at beginning of the dorsal cilia, not obviously spotted with dark fuscous, except slightly beyond dorsal cilia. Cilia pale yellow, with dark line near the base. Underside of forewing dark fuscous, tinged with purple and showing the pale markings of upper side. Hindwings pale grayish fuscous, cilia pale, with indistinct dividing line, underside grayish fuscous. Abdomen grayish fuscous, tinged with yellow, anal tuft grayish ochreous. Legs yellowish, dusted with fuscous, anterior tibiæ and tarsi dark brown, joints of the latter pale at apex.

Exp. 28.0-30.0 mm.; 0, 1.12-1.20 inch.

Hab.—Colorado (Durango); Texas; New Mexico (Beulah).

My own and U. S. Nat. Mus. collection.

Very closely resembles *anatomella* in size and coloration, but is readily distinguished aside from differences in wing markings by the more slender labial palpi, the long ciliation of ♂ antennæ, and the latter being distinctly annulate.

S. fuscofasciella Chamb.—Pl. II, fig. 1.—Dyar's List, p. 568, No. 6474.

Doubtfully referred by its authors to *Euplocamus*. I here give his description *verbatim:*

"The palpi are brown on the upper and external surfaces, and on the basal portion of the tuft beneath; on the inner surface they are yellow.

"Head sordid yellowish; antennæ brown; thorax and patagia brown at base, but becoming yellowish towards the tip. To the naked eye the forewings appear yellowish, mottled with brown, with some distinct brown spots and a rather wide irregular brown fascia behind the middle, the anterior margin of which is straight from the costa to the fold, but having the posterior margin angulated backwards about the middle of the wing, at the fold the fascia is narrowed suddenly behind; the basal portion of the wing is distinctly brown, and there are two distinct brown spots in the apical part of the wing. Under the lens the entire wing appears to be traversed transversely by numerous, narrow, interrupted, confluent and irregular brown lines on a yellow ground, the brown of the fascia and base

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of the wing almost entirely obscuring the yellow. Abdomen brownish above, yellowish beneath. Anterior and middle legs yellowish, stained with fuscous, with the tarsi fuscous, annulate with yellowish. Hind legs yellowish, with some brownish markings on the anterior surface, especially on the tarsi. Al. ex. 1⅛ inch."

A critical examination of the type in the Cambridge Museum convinces me that this is a true *Scardia*. The presence of polyarticulate maxillary palpi excludes the species from both *Amydria* and *Euplocamus*. The brown color of the base is not so evident as might be inferred from the description, neither could I see the sudden narrowing of the post median fascia on the fold. Chambers does not mention the well-marked costal spots, of which the three before the fascia are geminate. The hindwings are wide, ochreous fuscous, with large, ill-defined quadrate spots in the costo-apical portion of the wing; the costal portion is more ochreous. The transverse vein of forewing is dark brown above; the underside shows the marginal markings of the upper. The type specimen has only the wings of one side left, but is otherwise in very good condition, excepting the cilia which are very defective. The wings are broad, the forewing being 13.5 mm. long and 5.0 mm. wide. A specimen in my collection determined by Lord Walsingham as *E. fuscofasciella* does in no wise agree with the type.

S. tessulatella Dyar's List, p. 568, No. 6473.--Head ochreous fuscous; labial palpi pale ochreous, dark brown externally, except the apices of the second and third joints; maxillary palpi pale ochreous. Antennæ brownish, finely annulate with pale; cilia of male short (one-half). Thorax ochreous, dark fuscous anteriorly. Forewings elongate-oval, slightly widened externally and broadly rounded at the apex; ground color ochreous, sprinkled with brownish and in the apical portion with whitish scales; extreme costa dark brown; interrupted by pale spots; basal third of wing with large, irregular subconfluent spots, one of which extends from the costa to the dorsal margin, and is more or less interrupted. Immediately behind the middle is a large costal spot which extends as a transverse fascia and attains the dorsal margin, this fascia is convex externally and overlies the transverse vein which is conspicuously darker than the adjacent part of the fascia, the latter is a trifle nearer the base at its dorsal end than on the costa. Beyond the latter is another smaller costal spot and just before the apex a larger one which, as an interrupted fascia nearly parallel to the termen, extends to the dorsal margin; cilia dark brown, interrupted by six or seven pale bars. Underside pale fuscous, showing the markings of the upper side. Hindwings grayish fuscous, with faint metallic lustre. Cilia concolorous, with pale basal line. Abdomen ochreous, tinted with fuscous above. Legs grayish ochreous; tarsal joints of anterior and middle pair blackish, pale at tip.

Exp. 20.0-22.0 mm.; 0.80-0.88 inch.

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Hab.—British Columbia (Wellington); Europe.

A male specimen in my collection has served for the above description. I have not seen an authentic specimen of this species, but the description tallies so completely with my specimen that I entertain no doubt of its identity.

S. Burkerella Busck.--Proc. U. S. Nat. Mus., xxvii, p. 777.--Antennæ pale, annulate with brown Wings rather elongate, pale ochreous; spots large, dark brown; no median fascia, a large oblique costal spot near the base extending beyond the fold; a large subquadrate spot about the middle, between these two are three or four small costal spots, and beyond the middle are four more; a large spot at end of cell and beyond it, but a little nearer the costa, another spot, these spots are connected by a dark line; a large subquadrate spot on dorsal margin about the middle, three or four spots along base of dorsal cilia, the last of these just before the apex is smaller and is opposite to the last costal spot, these spots extend somewhat into the cilia; aside from these coarser markings the wing is dotted with smaller dots and scales of a brown color.

Exp. 26.0 mm.

Hab.—Washington (Hoquiam).

Mr. Busck has kindly permitted me to see his type, from which the above short description was taken.

S. approximatella n. sp.--Pl. I, fig. 8.--Head ochreous, slightly tinged with brown. Labial palpi long and slender, pale yellowish, second joint porrect, externally and brush beneath, brown, the hairs of the latter are less stiff and dense and directed obliquely forward so as to form a projecting tuft beyond the joint; third joint as long as the second, slender, ascending and pointed, tinged with brown in its basal half externally. Maxillary palpi pale, plicate. Antennæ slender, grayish ochreous, annulate with dark fuscous above, more pronounced toward the base; joints less close set, longer than wide; cilia in the male long, 2 and over. Thorax yellowish, patagia brownish anteriorly. Forewings elongate-oval, less broadly rounded at the apex than *tessulatella*, ground color yellowish white, with scattered, pale brownish scales; near the base is an oblique costal spot attaining the fold; about the middle of the wing is a transverse fascia, beginning on the costa and extending in about equal width for two-thirds the width of the wing, when it becomes narrowed from both margins and attains the dorsal margin as a small spot, nearer the base than the apex; externally and near the costa the fascia sends out an angular projection. Between the fascia and the oblique basal spot are some transverse lines. Another spot on the apical third of the costa, including a pale dot on the costa and limited externally by another pale dot, does not reach the dorsal margin; terminal margin dark brown; a triangular spot about the middle of the dorsal cilia. Subplical space paler than rest of wing. Cilia pale, with distinct line near the base and another wider but less clearly defined near the outer edge; these lines are interrupted by four light bars of which the apical one is very narrow. Underside grayish fuscous, markings, except near the costa, not obvious. Hindwings elongate-oval, as wide as forewings, pale grayish, slightly tinged with fuscous. Cilia concolorous, with pale

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basal and another subbasal line. Abdomen grayish ochreous, tinged with fuscous. Legs yellowish, tinged with fuscous, tarsal joints of anterior and middle pair dark brown, pale at the apex.

Exp. 12.5-0.17 mm.; 0.5-0.8 inch.

Hab.—Pennsylvania (Hazleton, Mauch Chunk, Baldwin); New Jersey (Essex County, Kearfoot); District of Columbia, Maryland (Plummer's Island); Ohio (Cincinnati).

The smallest of our species and quite distinct, varies in extent of costal spots. The costal spot near the apex, instead of enclosing a pale spot, sometimes consists of two distinct ones.

XYLESTHIA Clem.

Dyar's List, p. 569.

Head entirely roughened. Tongue obsolete. Labial palpi ascending, second joint with a dense brush of coarse hair beneath, projecting forward; third joint thin, very short, thickened towards the apex with scales. Maxillary palpi filiform, 3-jointed, scaly, not folded. Antennæ two-thirds the wing length, more robust in the male; joints close set with verticillate scales, basal joint broadened, with pecten, rough haired. Forewings elongate, with scale tufts; 12 free veins; an accessory cell, vein 1^b furcate at base. Hindwings ovate, as wide as the forewings; 8 free veins, vein 8 inserted at three fifths; costa feebly emarginate in outer half. Hind tibiæ rough haired.

A very distinct genus, not closely allied to any other. Clemens describes the maxillary palpi as "very short and concealed;" they are distinctly 3 jointed, very slender and rather difficult to see among the rough vestiture of the head.

The three species heretofore described belong, without doubt, to one *pruniramiella* Clem., to which, however, I have to add a new and very distinct species. The two species are distinguished as follows:

Cilia of forewing with dark dividing line, not distinctly barred. **pruniramiella.**

Cilia with four light bars..... **Kearfottella.**

X. pruniramiella Clem.—Dyar's List, p. 569, 6476.—Head and maxillary palpi whitish; labial palpi and antennæ yellowish white, brush of former externally and scale whirls of latter ochreous fuscous. Thorax with fuscous spot. Abdomen fuscous. Forewings luteous, with white and dark brownish scales, so arranged as to form more or less distinct transverse lines. In some specimens

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the white scales form five double lines, more or less irregular or interrupted—*Congeminatella* Zell.; again, these lines are almost obsolete, with the dark brown scales condensed across the middle of the wing and in its costal portion—*clemensella* Cham. A dark spot, with white edging before, at the apex. In some specimens the dark scales in the apical part of the wing have a violet or purple reflection; there are four scale tufts in the subplical part of the wing; a small one at end and another about middle of disk; these tufts are generally effaced, except in fresh specimens. Cilia fuscous, with two or three darker dividing lines. Legs yellowish white, dusted with fuscous; tarsal joints pale at apex. Underside of abdomen pale fuscous.

Exp. 12.0–18.0 mm.; 0.48–0.72 inch.

Hab.—Atlantic States, Kansas, Arizona.

X. Kearfottella n. sp.—Pl. I, fig. 7.—Head white, some ochreous hairs before the insertion and on the basal joint of the antennæ. Labial palpi white, outer side sprinkled with fuscous scales. Antennæ yellowish white, biciliate in male, cilia under one. Thorax white, intermixed with ochreous, a dark fuscous spot each side immediately behind the eye and before the insertion of the forewing. Abdomen above fuscous, segments edged with whitish, underside grayish fuscous. Forewings white, with tawny and fuscous, the white predominating in the costal and the tawny color in the dorsal half of the wing; the fuscous scales are arranged in transverse lines and bands, edged with whitish; a rather wide band at three-fifths, rectangular to the costa and extending one-half across the wing, between this band and the base are five or six narrower, transverse lines; apical part of wing fuscous in the middle, from which extend three bars into the dorsal and two into the costal cilia. Hindwings pale grayish fuscous; cilia pale yellowish, with darker dividing line about one-half their length. Legs grayish white, anterior and middle thickly, posterior more sparsely dusted with fuscous; tarsi fuscous, joints annulate with white at the apex.

Exp. 10.0 mm.; 0.4 inch.

Hab.—New Jersey (Montclair, Kearfott); Pennsylvania (Washishton County).

It gives me pleasure to dedicate this species to Mr. W. D. Kearfott, from whom the type specimen—a male—was received. The other specimen—a female—was received from Mr. Henry Klages some years ago: it is rather mutilated.

ABACOBIA gen. nov.

Type *carbonella*.

Maxillary palpi short and rather thick, porrect, apparently 3-jointed, not plicate. Labial palpi slender and moderately long, rather widely separated, second joint slightly curved, clavate, with long, stiff, spreading bristly hairs beneath and on the side, third joint long and slender, scaly, with a few, scattered bristly hairs. Tongue obsolete.

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Eyes large, somewhat prominent and widely separated beneath. Antennæ slender, scarcely exceeding one half the wing length; basal joint with pecten. Forewings elongate, pointed, without scale tufts; all veins present and free, 10 arises near end of cell; no accessory cell; 1^b furcate. Hindwings as wide as the forewings, ovate, costa retuse beyond middle; all veins present, 5 and 6 stemmed. Hind tibia roughened, with long, coarse hair. Ovipositor of female exserted.

The type of the genus resembles a *Tinea* of the *croceoverticella* group. The absence of plicate maxillary palpi, the peculiar formation of the labial palpi, which have the appearance of a branch of pitch pine, removes this genus from the neighborhood of *Tinea*.

A. carbonella n. sp.—Pl. V, fig. 1.—Entire insect, with exception of hindwings, dark fuscous brown; bristly hairs of labial palpi like those of the head, tipped with white. Forewings elongate, obtusely pointed; the general fuscous color is interspersed with scattered dark brown and also paler scales, the former aggregated into a spot at end of cell and also generally more dominant in apical part of wing where they are somewhat arranged into ill-defined lines. Hindwings pale fuscous, with brassy lustre, cilia concolorous, with paler basal line. Abdomen and underside of body ochreous fuscous. Tarsal joints paler at apex.

Expanse 14.0–19.0 mm.; 0.56–0.76 inch.

Hab.—Pennsylvania (Hazleton).

Seven specimens in my collection, all taken at electric light, in as many seasons. It has not occurred since 1900. A specimen sent to Lord Walsingham was returned under the MS. name *Tinea carbonella*, the specific name of which I have retained. The white tipped, rough hairs of head and palpi give them a peculiar, hoary appearance.

MONOPIS Hb.

Dyar's List, p. 570.

Head rough, tongue present; antennæ about three fourths the length of the forewings. Labial palpi porrect or somewhat drooping, second joint with apical bristles, third joint pointed. Maxillary palpi well developed, plicate. Posterior tibiæ rough haired. Forewings with a vitreous spot in the disk, corresponding to end of cell; all veins present, veins 3 and 4 stalked, vein 2 sometimes out of stem of 3 and 4; 1^b furcate at base. Hindwings 1, cilia generally under 1; all veins present, free, or rarely 5 and 6 stemmed.

According to variation in venation the species occurring in our fauna may be arranged in three groups as follows:

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Vein 2 of forewing arising from common stem of 3 and 4; vein 7 and 8 stemmed.
Veins 5 and 6 of hind wing stemmed.....GROUP I.
All veins of hindwings free.....GROUP II.
Vein 2 of forewings arising from cell.....GROUP III.

GROUP I.

But one species, *M. rusticella* Hb., belongs here.

GROUP II.

Forewings with pale tornal patch.
Costa without dark spots before the middle.....**biflavimaculella.**
Costa with oblique, brown spots.....**marginistrigella.**
Forewings with a large trapezoidal costal spot, no tornal patch..**manachella.**

GROUP III.

Head and thorax whitish or yellowish white.....**dorsistrigella.**
Head and thorax saffron-yellow.
Dorsal margin of forewing yellow.....**crocicapitella.**
Dorsal margin of forewing not yellow.....**irrorella.**

M. rusticella Hb.—Dyar's List, p. 570, No. 6489.—Palpi pale, yellowish white. Head yellowish, antennæ dark brown. Thorax and forewings fuscous brown, with purple reflection, spotted with dark velvety brown and sprinkled more or less with whitish scales, which, on the costa, give rise to distinct, though inconspicuous spots; a pale patch above the vitreous spot and another at beginning of dorsal cilia, often absent in the female; cilia grayish, with darker dividing line. The vitreous spot does not extend beyond two-fifths the wing length. Hindwings over 1; grayish fuscous, with brassy or purplish reflection.

Exp. 14.0–20.0 mm. (Meyrick); 0.56–0.8 inch.

Hab.—Europe, Asia, North America, New York.

Four specimens in my collection from central New York (Ithica); in none of these is there any indication of the pale costal and tornal patches.

M. biflavimaculella Clem.—Dyar's List, p. 571, No. 6495.—Palpi yellowish, labials tinged with fuscous externally. Head pale ochreous, slightly mixed with brown in front. Antennæ dark fuscous, basal joint velvety black above. Thorax dark seal brown, with a large yellowish spot anteriorly and a smaller, less distinct one at its posterior extremity. Forewings purplish brown, with faint purplish reflection, with numerous, velvety brown, transversely placed spots; a large pale yellow subtrapezoidal costal spot occupying the middle third, two or three small dots on costa before the apex, a spot at beginning of dorsal cilia and some small dots in the basal part of the latter. Cilia fuscous, with three dividing lines. Hindwings pale yellowish, sparsely dusted with fuscous, cilia pale gray, with darker in the basal portion. Abdomen fuscous, apical half of segments above silvery gray. Legs yellowish, dusted with fuscous, more especially so the anterior pair.

Exp. 14.0–16.0 mm.; 0.56–0.64 inch.

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Hab.—Atlantic States; Oregon (Corvallis); Washington Territory (Seattle); Texas (Fedora).

This is one of our well known Tineids. Its resemblance to *rusticella* is superficial; at once distinguished by the hindwings having all veins free, while veins 5 and 6 are stemmed in *rusticella*. The type of the species, in excellent condition, is in the Clemens' collection at the Academy of Natural Sciences, Philadelphia.

M. marginistrigella Cham.—Dyar's List, 572, No. 6511.—Palpi sordid pale yellowish, labials brownish externally, except the apex of third joint. Head yellowish; antennæ dark brown above, fuscous beneath. Thorax dark velvety brown. Forewings dark brown, intermixed with silvery white, and pale yellowish white scales; the white scales prevail along the entire costal and free dorsal margin, forming short, transverse strigulations upon the latter; immediately before the middle of costal margin they form a large, ill-defined patch, traversed by an irregular dark brown oblique streak which reaches to the vitreous spot, beyond this patch are three oblique streaks, and before it one distinct and a number of smaller spots, separated by white; a pale patch at beginning of dorsal cilia containing on the margin a small black dot. Cilia pale yellowish, with three darker dividing lines, three dark bars in the costal and irregularly streaked and spotted in the dorsal portion. Hindwings grayish white, dusted with fuscous towards the apex and having a slight brassy lustre. Abdomen above brown, intermixed with gray. Underside of abdomen and legs silvery white, tinged with yellowish; legs conspicuously spotted with dark brown.

Exp. 11.0-13.0 mm.; 0.44-0.52 inch.

Hab.—Kentucky (Chambers); Pennsylvania (Hazleton); New Jersey (Montclair, Kearfott); Louisiana (Vowells, Mills).

The above description varies somewhat from that given by Chambers, which, to me at least, made the recognition of this species with a shadow of certainty, very difficult if not impossible, but having carefully studied and compared the type with specimens in my collection, the authenticity is fully established. Instead of the white spots along the entire costal margin, as stated by Chambers, it is the dark oblique streaks which are more conspicuous. The pale lines in the costal cilia extend in some specimens into the wing proper.

M. monachella Hb.--Dyar's List, p. 530. No. 6490.

Mr. Meyrick gives the following description:

"Head and thorax white. Forewings less narrow, dark ferruginous fuscous, with numerous small dark ashy fuscous spots; an ochreous white trapezoidal blotch, extending along costa from before middle to near apex and reaching half across wing, lower side sinuate; a subhyaline spot in lower anterior angle of this. Hindwings brassy gray, darker posteriorly. Exp. 11-17 mm."

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According to Mr. Busck a specimen of this European species from Canada is in the U. S. Nat. Mus. A specimen without locality label and probably determined by Zeller is in the Cambridge Museum.

M. dorsistrigella Clem.—Dyar's List, p. 571, No. 6502.

I here give Clemens' description of this species:

"Labial palpi yellowish, dark brown externally, third article yellowish. Head and front very pale yellow, tinged with dark brown on the sides above the eyes and at base of antennæ. Antennæ dark brown. Thorax dark brown, with the disc very pale yellow. Forewings blackish brown, somewhat tinged with obscure reddish, with a dorsal streak along the inner margin, whitish or pale yellowish white, and usually somewhat dilated above the anterior angle; with a costo-discal patch of the same hue, and the costa punctuated with pale yellowish atoms, which become small spots toward the apex of the wing and on the posterior margin. Hindwings pale brownish, with a reddish hue; cilia gray. Exp. 4.75–6.00 lines."

To this I wish merely to add that the thorax should be described as pale yellow, patagia dark brown. Abdomen above ochreous fuscous; body beneath and legs sordid grayish yellow. The antennæ pale fuscous. Two type specimens in good condition are in the Clemens collection at the Academy of Natural Sciences, Phila.

Exp. 12.0–14.5 mm.; 0.48–0.58 inch.

Hab.—Atlantic States; New Mexico (Las Vegas).

Common at light and on trunks of trees.

M. crocicapitella Clem.—Dyar's List, p. 570, No. 6488, cited as synonym.

The author describes this species as follows:

"Labial palpi yellowish, dark brown externally. Head and front saffron yellow. Forewings dark fuscous, with dispersed saffron yellow scales, especially along the costa, with a saffron yellow dorsal streak and a paler, nearly round, discal spot. Hindwings pale brownish gray. Exp. al. 4.50 to 6.50 lines."

The "paler, nearly round discal spot" mentioned in the description is the vitreous spot and is situated in the middle of the wing-length. Thorax yellow, patagia dark brown. Legs and underside of body are pale yellowish, dusted with fuscous.

Exp. 11.0–16.5 mm.; 0.44–0.76 inch.

Hab.—United States.

Have seen specimens from every faunal district. Specimens from California are generally larger than the eastern forms. Heretofore, this species has been confounded with the European *M. ferruginella*

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Hb. and recorded as such in our lists. Mr. A. Busck * first pointed out the differences between the two species, to which I may add that in *M. ferruginella* the hindwings are more elongate and less rounded at the apex, of a more fuscous color, with cupreous reflection and cilia fuscous.

M. irrorella n. sp.—Palpi pale yellow, labials more or less fuscous externally. Head saffron yellow. Antennæ fuscous, paler beneath, basal joint dark brown. Thorax dark velvety brown, tips of patagia yellowish. Forewings whitish, intermixed in nearly equal proportion with brown, the latter forming subquadrate spots and transverse or suboblique strigulations, the latter more marked along the costal margin. A markedly darker patch between the vitreous spot and the fold; the subplical space has less of the dark scaling, except at the anal angle, which is dark brown. Cilia sordid white, with three dark dividing lines, basal portion brown; underside fuscous, with purple reflection. Hindwings grayish fuscous; cilia grayish, with a faint dividing line at ½. Abdomen above fuscous, mixed with gray; underside of body and legs grayish, tinged with fuscous.

Exp. 11.0-14.5 mm.; 0.44-0.58 inch.

Hab.—Pennsylvania (Mauch Chunk, Hazleton); New York.

A number of specimens in my collection; taken at light and on trunk of an old cherry tree. A specimen submitted to Lord Walsingham for determination was returned as *Tinea aureosuffusella* Ch., to which, however, as will be seen, it bears no relationship.

TRICHOPHAGA Rag.

Dyar's List, p. 573.

Differs from *Tinea* in the neuration of the forewing; veins 10, 11 and 12 concurrent, running into vein 9 and thus attaining the costa.

The single species occurring in our fauna is the cosmopolitan.

T. tapetiella L.—Dyar's List, p. 573, No. 6532.—Head white; basal two-fifths of forewings dark purplish fuscous, remainder ochreous white, thinly strigulate with gray; a roundish gray posterior discal spot; some small black dots about the apex. Hindwings brassy gray.

Exp. 15.0-22.0 mm.; 0.6-0.88 inch.

As far as I am able to learn this species has thus far occurred only in the Southern States. In Dr. Dyar's List of North American Lepidoptera, *Tinea occidentella* Cham. is cited as synonym or variety—which?—it bears no relationship whatever to the species under consideration. The name has repeatedly been printed *tapezella*, which is erroneous.

* Proc. Ent. Soc. Wash., Vol. V, p. 184.

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PHRYGANEOPSIS Wlsh.

Dyar's List, p. 573.

Head rough. Antennæ pubescent in both sexes. Maxillary palpi plicate; labial palpi three times the length of the head, porrect, clothed with coarse, hair like scales. Forewings rather broad; all veins present, free, 1^b furcate. Hindwings a little wider than the forewings, oval; all veins present. Abdomen compressed. Tibiæ rough haired, somewhat thickened.

P. brunnea Wlsh.—Dyar's List's, p. 573, No. 6536.—Head ochreous; palpi brown; antennæ whitish brown. Forewings chocolate-brown, with purple (♂) or greenish purple (♀) reflection. A pale, ochreous spot about the end of the cell and another at the middle of the dorsal border; two or three groups of similar scales on the outer half of the costa. Cilia concolorous. Hindwings brown (♂) or purplish (♀). Abdomen and legs brown, feet a trifle paler.

Exp. 20.0 mm. (♂)-25.0 mm. (♀); 0.8-1.0 inch.

Hab.—California.

The species is unknown to me in nature.

INCURVARIA Haw.

Dyar's List, p. 569.

Head rough. Tongue developed. Antennæ shorter than the forewing, ciliated in the male. Maxillary palpi folded; labial palpi variable in length, filiform, sometimes with terminal bristles of second joint; third joint pointed. Forewings subtriangular to ovate-lanceolate, all veins present, 1^b furcate; hindwings oval or ovate-lanceolate, all veins present, free, cilia under 1. Hind tibiæ rough haired, except *aureovirens*.

As here defined, the species occurring in our fauna, as far as known, may conveniently be arranged into three distinct groups, each having a subgeneric value, and the last of these probably distinctly generic. Scarcity of material must leave this question unanswered for the present:

Larger species; 10.0 mm. and more. Hindwings at least as wide as the forewings, oval, apex broadly rounded.

Forewings dark, fuscous or purplish brown, with pale fascias and spots. Scales of hind wings oval, veins of forewings all free.....GROUP I.

Forewings unicolorous, or else ground color, white or grayish white, with dark brown fascias and spots, veins 7-8 stalked. Scales of hindwings hair like .....GROUP II.

Smaller species; not exceeding 7.0 mm. Hindwings narrower than forewings, ovate-lanceolate, scales hair like .....GROUP III.

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GROUP I.

The two species belonging to this group are distinguished as follows:

Larger, 22.0 mm. Forewings with two entire fascias .....**oregouella.**
Smaller, 14.0 mm. Forewings with one entire fascia.....**rusticella.**

I. oregouella Wlsh.—Dyar's List, p. 569, No. 6486.—Head orange-yellow, very rough above, smooth in front. Antennæ of male pubescent, scarcely one-half the length of forewing, annulated with white and fuscous. Forewings brown, with two fascias and a costal spot white, a fascia at the basal fourth, pointing obliquely inwardly from the costa and wider on the dorsal margin; another fascia slightly beyond the middle, which appears to consist of two elongate triangular spots, one on the costal and one on the dorsal margin, joined on the middle of the wing by a narrow streak running inwards and upwards and connecting the apex of the dorsal spot with that of the costal. Halfway between the fascia and the apex is a small elongate white costal spot, the cilia are also white, except at the angle where they are brown. Hindwings grayish ochreous.

Exp. 22.0 mm.

Hab.—Oregon (Canyon City on John Day's River).

Bred by the author from a larva boring into the stem of a species of *Saxifrage*. Thus far, only the type, a male, in his Lordship's collection, is known.

I. russatella Clem.—Dyar's List, p. 569, No. 6484.—Head ochreous yellow, palpi and basal part of antennæ pale yellow. Labial palpi ascending, third joint somewhat flattened and nearly as long as the second. Antennæ incrassate towards the base, joints not close set, bipectinate (♂) or finely pubescent (♀). Thorax golden brown, with some lustre. Abdomen dark fuscous brown. Forewings deep golden brown, with purple lustre in some lights; a yellowish white fascia commencing at one-third of costa, pointing obliquely backwards to and becoming wider towards the dorsal margin which it reaches at one-fourth; a large triangular costal spot beyond the middle and a similar one opposite to but a little further from the base, on the dorsal margin, of the same color. Cilia whitish around the apex, becoming brownish towards the posterior angle. Hindwings as wide as the forewings, oval, purplish brown, scales orbiculoidal; cilia short, concolorous, paler towards the outer edge. Underside of wings brownish fuscous, with feeble purple reflection. Legs grayish white, anterior more or less fuscous, tarsi annulate with pale. Abdomen beneath pale yellow.

Exp. 12.0-14.0 mm.; 0.48-0.56 inch.

Hab.—New York (Ithaca); Canada (Montreal).

Three specimens in my collection. Lord Walsingham who saw the type—no longer existing—in the Academy of Natural Sciences, Philadelphia, in 1872, recognized this species as his *Lampronia tripunctella*. The small costal spot between the large costal spot and the apex is wanting in two and present in one of my specimens; the fascia near the base is figured as equidistant on both margins,

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whereas it is oblique in all my specimens, corresponding thus rather with *oregonella*. Wlsh.; however, I have no doubt of their identity.

Mr. A. Busck,* not having seen this species, refers it to *Eudarcia* and identical with *T. cæmitariella* Ch.; this is erroneous. I have seen the type of the latter species in the Cambridge Museum, and there is not even a remote resemblance between the two forms.

GROUP II.

The species constituting this group are quite dissimilar in habitus from those of the first; abdomen and antennæ more slender.

Four species belong here, which may be thus separated:

Forewings white, with dark brown markings.
  In large spots.....**piperella.**
  In fascias.....**rheumapterella.**
Forewings without markings.
  Unicolorous, golden bronze.....**senescens.**
  Nearly unicolorous, creamy white.....**politella.**

1. piperella Busck.—Proc. U. S. Nat. Mus., Vol. XXVII, p. 775.—So closely does this species resemble *Greya punctiferella* Wlsh., that aside from generic differences, its recognition would be quite difficult. It is, however, a larger insect and has scarcely any of the pale yellowish color of the forewings.

Exp. 21.0 mm.

Hab.—Washington Territory (Pullman); Colorado (S. Park).

A mutilated specimen in my collection.

1. rheumapterella n. sp.—Pl. I, fig. 4.—Head hoary, scales somewhat appressed. Labial palpi ascending, grayish white, dusted with fuscous externally. Tongue strongly developed. Antennæ slender, and one-half the length of forewings, yellowish white from the base passing into deep brown beyond the middle. Thorax deep brown, with a white stripe each side of median line, widest anteriorly. Forewings elongate-oval, white, marked with dark brown as follows: base, a large semi-oval costal spot, a curved fascia beginning at one-third of costa, concave towards the base and attains the dorsal margins at one-half the distance from the base than the costal extremity, a transverse, slightly curved fascia at the middle, a Y-shaped, confluent fascia beyond the middle and connecting at the dorsal margin with the wide apical border. Cilia grayish fuscous, becoming whitish apically; underside shows dark markings of upper side but more diffusely towards the apex. Hindwings white, with a faint grayish tinge and rather thickly dusted with fuscous on costal half of apex. Cilia white under 1, underside with fuscous scales along costal margin and about apex. Abdomen dark fuscous brown above. Thorax beneath brown, overlaid with silvery white scales, underside of abdomen yellowish brown. Legs grayish white, tarsi tinged with yellowish.

Exp. 11.0 mm.; 0.44 inch.

* Proc. Ent. Soc. Wash., Vol. V, p. 193.

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Hab.—Colorado (Durango).

Two female specimens in my collection. A very distinct and easily recognized species.

I. æneoscens Wlsh.—Dyar's List, p. 569, No. 6478.—"Antennæ whitish at base, tending to piceous beyond. Palpi whitish. Head yellowish white. Thorax, forewings and cilia unicolorous, pale, golden brown. Hindwings purplish gray: cilia gray. Abdomen grayish. Lateral claspers elongate, triangular, upturned, deeply excised beneath near the base and with an inwardly projecting short point at their lower extremity; uncus short, obtuse, projected but not hooked."

Exp. ♂, 14.0 mm.; ♀, 12.0–13.0 mm.

Hab.—Oregon (Rogue River). U. S. Nat. Mus. collection. I have not seen this species.

I. politella Wlsh.—Dyar's List, p. 569, No. 6482.—Head, palpi, thorax and wings a pale yellowish white, with a faint grayish tint, particularly at base of costa and along veins. Last joint of labial palpi flattened. Scales of head somewhat appressed. Antennæ slender, dark fuscous, about two-fifths the length of forewings, joints longer than wide, feebly unipectinated in the male. Forewings elongate-oval. Hindwings more grayish. Abdomen and legs grayish fuscous. Cilia concolorous.

Exp. 14.0–17.0 mm.; 0.56–0.68 inch.

Hab.—Oregon (The Dalles and Rogue Rivers); Colorado (S. Park; Chimney Gulch).

Three specimens, 2 males, 1 female, from Colorado and determined by Lord Walsingham, do not show the æneous tinge mentioned by his Lordship in the description of the species. The labial palpi, which are rather long, are strongly ascending in one specimen, and with the third joint slightly drooping in the other two.

GROUP III.

The two species of this group, I refer with grave doubts to the genus under consideration, they are small, scarcely exceeding one-quarter inch in expanse. Forewings ovate-lanceolate, fuscous brown, with æneous lustre and pale fascia and marginal spots; hindwings ovate-lanceolate, pointed, with hair-like scales, and are distinguished as follows:

Head fuscous brown; no spot in apical part of forewing.....**labradorella.**
Head sordid white; a pale spot in apical part of wing.....**aureovirens.**

I. labradorella Clem.—Dyar's List, p. 569, No. 6480.—"Forewings fuscous, with a brassy hue, with a white band at the basal third of the wing and an opposite dorsal and costal spot of the same hue at the apical third of the wing and which nearly meet in the middle of the wing. Cilia concolorous with fore-

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wings. Hindwings fuscous, somewhat iridescent. Head and antennæ dark fuscous."

Exp 7.0 mm.; 0.28 inch.

Hab.—Labrador.

I have seen the type in the collection at the Academy of Natural Sciences, Philadelphia, and have nothing to add to the description given by Dr. Clemens, except that the antennæ are closely approximate at their insertion between the eyes, which is not the case in *aureovirens*.

I. aureovireus n. sp.—Head sordid white, a little more dusky on lower part of face. Maxillary palpi fuscous, labials rather short, drooping, silvery white, faintly dusted with fuscous. Antennæ fuscous. Thorax golden brown. Forewings elongate, ovate-lanceolate, golden brown, with feeble greenish reflection; a white fascia, rather narrow and of equal width, at one-third, at right angle to the dorsal margin and terminating in a point on the costa, an elongate triangular spot on the costa at two-thirds and opposite to a similar though more elongate spot on the dorsal margin, the apices of these two spots almost meet; between these spots and the apex is an irregular spot in the middle of the wing; these spots like the fascia white. Cilia fuscous in basal part becoming silvery gray towards their free margin. Hindwings ovate-lanceolate, narrower than the forewings, fuscous; cilia concolorous, over 1. Underside of wings fuscous, those of forewings with some metallic lustre, hindwings paler. Legs grayish fuscous, with some metallic lustre, hind tibiæ not rough haired.

Exp. 6.5 mm.; 0.26 inch.

Hab.—Pennsylvania (Hazleton).

A single specimen in my collection, taken on the wing in June, 1899. It is minus abdomen. Very close to and congeneric with the preceding species, but from which it is sufficiently distinguished by the characters noted.

GREYA Busck.

Proc. Ent. Soc. Wash., Vol. V, p. 194.

Differs from *Incurvaria* only in venation. Forewings with 11 veins, vein 10 absent, all separated. Hindwings as wide as forewings, all veins present, free.

The three species included in this genus by Mr. Busck may be separated as follows:

Wings unicolorous, grayish brown ..... **humilis.**
Not unicolorous, ground color whitish or yellowish white.
Spotted with fuscous ..... **salenobiella.**
With 18-20 dark brown spots ..... **punctiferella.**

1. humilis Wlsh.—Dyar's List, p. 569, No. 6479.—"Of uniform, grayish brown color, hindwings slightly darker than the forewings; legs scarcely paler."

Exp. 13.0-14.0 mm.; 0.52-0.56 inch.

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Hab.—California (Crescent City).

The type (♂) in Lord Walsingham's collection. I have not seen this species.

I. solenobiella Wlsh.—Dyar's List, p. 569, No. 6485.—"Head and palpi whitish. Antennæ cinereous, somewhat annulated with whitish towards the base; slightly pubescent in the male. Forewings whitish, thickly sprinkled with rather shining, yellowish brassy scales, more conspicuous in the female than in the male, and grouped into irregular blotches, especially along the apical margin and about the middle of the wing. Cilia whitish. The hindwings are pale, grayish cinereous, the cilia the same. The male is slightly larger than the female, and has more the appearance of a *Solenobia*, especially when slightly worn."

Exp. ♂, 18.0 mm.; ♀, 16.0–17.0 mm.

Hab.—California (near S. Francisco).

The above is Lord Walsingham's description. Not known to me in nature.

I. punctiferella Wlsh.—Dyar's List, p. 569, No. 6483.—Antennæ half as long as forewing, straw colored at base, brownish beyond. Palpi very short, depressed, third joint half as long as the second. Head and thorax straw colored. Forewings pale straw colored, with from 18–20 chocolate-brown colored spots, varying in size, number and distribution; those on the outer half of the wing have a tendency to form two oblique lines, running parallel to outer margin; base of costa tinged with brown; underside brownish; cilia pale. Hindwings cinereous gray; cilia concolorous; underside pale grayish.

Exp. 15.0 mm.; 0.6 inch.

Hab.—California (Mendocino County); Oregon (Rouge River).

CYANE Cham.

Dyar's List, p. 573.

Head rough haired. Labial palpi semi-ascending, spreading, robust and of moderate length; second joint thickened towards the apex and roughened beneath with lateral and apical setæ, third joint nearly as long as the second, grooved beneath longitudinally, scaly. Maxillary palpi plicate. Antennæ of moderate thickness, a little over one-half the anterior wing length, tapering towards the apex, joints close set with verticillate scales, uniciliate in the male. Forewings elongate oval, 12 veins, 2 close to angle of cell, 1^b simple. Hindwings rhomboidal, as wide as the forewings, costa nearly straight, dorsal margin strongly rounded to the apex, 7 veins, 2 remote from angle of cell, 3 wanting. Posterior tibiæ rough haired.

Chambers describes the palpi as devoid of bristles, they are well marked in fresh specimens, the third joint is not merely flattened but sulcate beneath, and the hindwings are not wider than the forewings.

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Only one species known:

C. vesaliella Cham.—Pl. VI, fig. 5.—Dyar's List, p. 573, No. 6535.—Head sordid yellowish white, intermixed on the vertex with brown. Maxillary and labial palpi yellowish white, second joint of latter externally and a spot on the terminal, as well as setæ, dark brown. Antennæ yellowish white, annulate with brown. Thorax brown, mixed with whitish in posterior two-thirds. Forewings grayish fuscous; extreme base, costa and adjacent part of wing dark brown, just beyond the middle the brown expands into a large spot, extending fully one-half across the wing, before this spot the brown costal margin is interrupted by about three or four, and beyond it by two white, somewhat oblique striæ; a dark spot near base of dorsal margin and obliquely above two more, a spot in middle of dorsal margin, and between it and the large costal spot is another smaller spot; dorsal cilia whitish, costo-apical dark brown, containing three white spots. Hindwings grayish fuscous; cilia a shade paler, with a faint darker line near the base. Abdomen fuscous, darker posteriorly, anal brush pale brown. Underside of wings and abdomen brownish fuscous. Legs greyish fuscous.

Exp. 8.5-11.0 mm.; 0.34-0.44 inch.

Hab.—Kentucky, Pennsylvania, New Jersey, New York, Florida, Louisiana.

Specimens in my collection from the localities named, except Kentucky. There is some variation in the relative predominence of the brown and pale coloring of the forewings. In a specimen from Florida, the spots on the dorsal margin become bands, and there is a suffusion of golden brown in the apical part of the wing.

BRECKENRIDGIA Busck.

Proc. Ent. Soc. Wash., Vol. V, p. 193.

Type *acerifoliella*.

Head rough, labial palpi rather short, drooping; second joint with a few setæ. Maxillary palpi plicate. Antennæ stout, somewhat flattened, joints closely set with scarcely perceptible denticulations, glabrous in both sexes, basal joint with pecten. Forewings elliptical, broad, equally narrowed from both margins towards the apex. 11 veins, veins 2, 3 and 4 parallel and at almost right angle to the dorsal margin, 5 absent, 1^b furcate. Hindwings as wide as forewings, subtrapezoidal, scales filiform; 8 veins, 5 6 short stemmed, 1^b furcate. Cilia under 1. Hind tibia rough haired.

In Mr. Busck's opinion it is vein 4 of forewing which is wanting, in this I must beg to differ from him. The furcation of vein 1^b of hindwing is anomolous.

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B. acerifoliella Fitch.—Pl. V, fig. 4.—Dyar's List, p. 569, No. 6476.—Head russet-yellow. Palpi fuscous. Antennæ blackish brown, pecten of first joint russet. Thorax dark brown, with golden green and bluish scales. Abdomen bronzed brown. Forewings dark fuscous, overlaid with deep, bluish purple scales; scattered over the disk and along the apical veins are some bright green, hair-like scales; both margins narrowly edged with golden. Cilia fuscous, sprinkled with bluish scales; underside fuscous brown, with purple reflection. Hindwings pale grayish fuscous, with a feeble, purple lustre, margin narrowly edged with pale metallic scales. Cilia pale fuscous; underside similar to upper. Underside of body dark fuscous, with some silver-white scales. Legs grayish, tinged with dark fuscous, basal half of tarsal joints paler.

Exp. 11.5–13.5 mm.; 0.36–0.54 inch.

Hab.—Atlantic States; British Columbia (Kaslo).

I took two specimens (males) flying low at dusk, May 22, 1897.

The following species greatly resembles the preceding in general habitus, and for this reason alone shall place it here provisionally. Generically it differs from *Breckenridgia* by the forewings with all veins present, free, 2, 3 and 4 parallel but reaching the dorsal margin at an acute angle; apex more obtusely pointed and the dorsal margin more strongly curved towards the apex. Hindwings less pointed at apex. The antennæ are robust, somewhat flattened and finely pubescent (♂); hindwings as wide as forewings, veins 5–6 short stemmed; scales hair like. Mouth parts and vestiture of head too mutilated to give an accurate description.

B. ? chrysurella n. sp.—Head, antennæ, thorax and anterior half of abdomen dark blackish brown. Wings uniformly coffee-brown, with scarcely a lustre. Cilia concolorous. Underside same as above. The last four abdominal segments, above and beneath, as well as the sexual armature, thickly clothed with coarse fulvous pubescence. Anterior and middle legs fuscous brown, posterior yellow; tarsal joints banded with brown.

Exp. 15.0 mm.; 0.6 inch.

Hab.—Colorado.

A male specimen in my collection. The conspicuous deep yellow, pubescens forms a strong contrast to the otherwise sombre appearance of the insect.

ISOCORYPHA gen. n.

Type *mediostriatella*.

Head strongly roughened. Labial palpi moderate, second joint with lateral setæ, terminal pointed. Maxillary palpi plicate. Antennæ rather thick and as long as the forewings, simple in both sexes. Forewings elongate, pointed; 12 veins, 7 and 8 short stemmed, 1^b not furcate. Hindwings ovate-lanceolate, costa nearly

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straight, slightly excised in its apical two-fifths; 8 veins, anterior median concurrent with 8 and sending a short oblique vein to the beginning of vein 7. Hind tibiæ roughened with long, stiff hairs.

The type of the genus was placed by Clemens in *Incurvaria* with a remark to its doubtful position in the same. I have one other species to add to the genus.

The two species are distinguished as follows:

Antennæ yellow; longitudinal stripe of forewing not including the anal angle. **mediostriatella.**

Antennæ fuscous; stripe commences at base of dorsal margin. **chrysocomella.**

I. mediostriatella Clem.—Pl. V, fig. 5.—Dyar's List, p. 569, No. 6481.—Head deep ochre-yellow. Labial and maxillary palpi yellowish, former fuscous brown externally and beneath. Antennæ pale yellow throughout. Thorax a deep dark brown. Forewings dark purple-brown, a broad stripe beginning in middle of base and leaving each margin free, extends longitudinally through middle of wing and half its length; immediately beyond and very narrowly separated from it is a large dorsal spot, and opposite to it but a little further an oval costal spot, which, however, leaves the extreme costa free, all pale golden yellow; apical cilia pale yellow, remainder brown, a few minute yellow dots along base of cilia; brown part of wing dusted with very fine, yellowish scales; underside purple-brown. Hindwings golden brown, scales oval; cilia fuscous, scarcely over 1; underside brown, paler than the forewings. Underside of body and legs silvery gray, tinged with yellowish and dusted with fuscous.

Exp. 8.5–9.0 mm.; 0.34–0.36 inch.

Hab.—Atlantic States.

I have taken this species in August and September in damp localities; also attracted by light.

I. chrysocomella n. sp.—Head deep sulphur-yellow. Palpi pale yellow, labials tinged with fuscous externally. Antennæ brownish fuscous, paler beneath and not quite as long as forewings. Thorax sulphur-yellow, slightly intermixed with brown. Forewings a reddish brown, a longitudinal stripe, beginning at the anal angle and basal part of dorsal margin, somewhat curved and becoming wider posteriorly, reaching to middle of wing length, where it connects with a large costal spot which includes extreme costa, and opposite to which and a little further is a dorsal spot which extends into the cilia, all bright golden yellow; the brown part is sprinkled with pale, whitish hair like scales, apical part with yellow scales. Cilia brownish, yellow around the apex. Hindwings brownish fuscous. Underside of body and legs grayish fuscous, tarsi annulate with pale.

Exp. 7.0 mm.; 0.28 mm.

Hab.—Kansas (Onaga).

A single specimen in my collection. Very similar to and yet very distinct from the preceding.

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TINEA L.

Head entirely rough haired. Maxillary palpi long, polyarticulate, plicate. Labial palpi moderately long, more or less porrect, somewhat drooping, ar else semi-ascending, cylindic, the second joint often thickened towards the apex, in some species roughened beneath with scales; generally with spreading apical setæ; terminal joint shorter than the second, more or less acutely pointed. Tongue very short or nearly obsolete. Antennæ shorter than the forewings, generally a little thicker and very finely pubescent in the male, basal joint at times with pecten. Forewings elongate, pointed, more rarely moderately wide; 12 veins, 7 to costa, 4 and 5 free (except *rileyi*), 1^b furcate, with or without accessary cell. Hindwings ovate to nearly lanceolate; as wide or wider than the forewings, in which case the costal margin is not or very feebly retuse towards the apex, or else narrower than the forewings, in which case the wing becomes more pointed, and the costal margin is distinctly retuse or emarginate beyond the insertion of vein 8. Cilia under 1 in the broader winged to 1 in the narrower winged forms. Hind tibia rough haired.

A genus of great extent, having representatives in every part of the globe. I have here, as elsewhere, preferred to arrange the species into groups according to natural affinities, rather than into a long synoptical table, though it must be admitted that in a few instances, especially where a species was known by description only, the given position may not remain tenable.

The species have been arranged in groups as follows:

Hindwings as wide or wider than the forewings, vein 8 generally reaches the margin very near to the apex; costal margin not or scarcely retuse near the apex.

Stigmata of forewing distinct.

Forewings yellow to fuscous. Head never white.

fuscipunctella Group.

Head and ground color of forewings whitish ..... **occidentella** Group.

Stigmata generally obsolete, first discal always absent; color dark brown, stigmata, when present, pale ..... **croceoverticella** Group.

Hindwings under 1; vein 8 reaches the margin at one-half or three-fifths, costa emarginate beyond. Stigmata generally obsolete.

Markings of forewings predominantly in longitudinal lines.

oregonella Group.

Without strongly marked longitudinal lines ..... **defectella** Group.

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Fuscipunctella Group.

The species which comprise this group resemble each other in general appearance and mode of wing markings. Ground color of forewings ochreous or grayish, with an ochreous tinge, dusted and marked with dark fuscous; stigmata generally all present. Hind-wings as wide or wider than the forewings (except *bimaculella*), costa not or feebly retuse beyond the insertion of vein 8, which attains the margin about three-fourths or four-fifths the wing length. Head never white.

I have arranged the species as follows:

Forewings with large, well-marked costal spots; eyes as widely separated beneath as their diameter.
Ground color of forewings ochreous ..... **misella.**
Forewings grayish fuscous ..... **obscurostrigella.**
Costal spots, when present, small and irregular; eyes separated beneath less than their diameter.
Forewings ochreous; stigmata all present.
A semi-circular spot on base of forewing ..... **fuscipunctella.**
Without such a spot.
A dark streak from base to apex ..... **apicimaculella.**
Without such a streak.
Dark spot on middle of dorsal margin ..... **orleansella.**
Without such a spot.
A row of spots in the fold.
Forewings stramineous ..... **straminiella.**
Costal half of forewing fuscous brown ..... **bimaculella.**
Fold without row of spots.
Without transverse lines.
Wings broader, pale yellow ..... **trimaculella.**
Wings more elongate, ochreous brown ..... **carnariella.**
With transverse lines ..... **griseella.**
Forewings pale gray to grayish fuscous, tinged with ochreous; first discal spot often absent or ill-defined.
With paler lines in apical part of wing ..... **grumella.**
Without pale line.
Forewings nearly unicolorous ..... **pellionella.**
Forewings not unicolorous ..... **misceella.**

T. misella Zell.—Dyar's List, p. 572, No. 6514.—Maxillary palpi ochreous; labial palpi moderate, ochreous, more or less fuscous enternally, second joint setulose beneath and at the apex, third joint somewhat compressed, pointed. Head ochreous brown, more so on vertex. Thorax brown, patagia paler. Antennæ brown, indistinctly annulated with yellow, basal joint with pecten. Forewings elongate-elliptic, ochreous, overlaid in varying density with dark brown; basal half of costa with numerous dots almost concealing the ochreous; beyond the middle are two large, subquadrate spots, and between them a smaller dot (some-

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times wanting); beyond these are three, somewhat smaller and more oblique spots, narrowly separated by curved ochreous lines; a large spot at end of cell and one on the fold about middle of wing length, on the remaining part of the wing the dark scales are arranged in ill-defined, irregular patches, having generally, and especially in the apical part, a transverse direction. Cilia ochreous, costal portion with three bars, dorsal portion sprinkled with brown scales. Underside fuscous, with purple reflection, especially in costal part of wing. Hindwings fully as wide as the forewings. Costa scarcely retuse, fuscous brown, with purple reflection; cilia grayish fuscous Abdomen brownish above, underside of body and legs ochreous, tinged with fuscous, especially the anterior pair.

Exp. 15.0 23.5 mm.; 0.6–0.94 inch.

Hab.—Europe; Texas (Kernville; Harris County); Florida; Pennsylvania (Hazleton).

Mr. Meyrick, in his Handbook of British Lepidoptera, gives the expanse of this species as 12–16 mm., which is considerably below the above given measurements, taken from specimens before me. I have seen a specimen in the Cambridge collection, collected by Boll and determined by Zeller, and another specimen from the same collector, in the U. S. Nat. Mus., determined by Lord Walsingham.

I. obscurostrigella Ch.--Dyar's List, p. 572. No. 6517.

The following is Chamber's description: Dark fuscous; the primaries obscurely mottled with sordid yellowish; there is a row of indistinct yellowish spots or streaks on the costa, from the middle to the tip and along the base of the dosal cilia. Al. ex. $\frac{13}{16}$ inch. Season, October.

Specimens in my collection agree so well with the above description, that I do not hesitate to consider them identical, and add the following supplementary description:

Palpi pale yellow, labials more or less fuscous externally, second joint roughened beneath by scales, with external and apical bristles, terminal joint somewhat compressed, shorter than the preceding, obtusely pointed. Head ochreous brown. Antennæ brown, annulate with pale. Thorax ochreous brown, with some purple lustre. Forewings elongate, sordid ochreous fuscous, overlaid with dark brown. Markings very similar to *misella*, but owing to general dark color much more obscure. Cilia grayish fuscous. Hindwings fully as wide as the forewings, dark purplish brown, pointed; cilia fuscous. Abdomen above fuscous. Underside of body and legs sordid ochreous, dusted with fuscous.

Exp. 12.0–17.0 mm.; 0.48–0.68 inch.

Hab.—Texas (Chambers); Illinois; Pennsylvania (Hazleton).

I have taken this species not infrequently at electric light. A specimen of this species sent to Lord Walsingham for identification was returned as a *Tinea* n. sp.; however strongly I might be

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inclined to accept his Lordship's opinion in this matter. I believe the above identification correct. The type is not in Cambridge or Washington. It is closely allied to *misella*, from which it differs by its general, dark fuscous appearance, the ochreous tinge scarcely perceptible in most specimens; third joint of labial palpi shorter, wider and more obtusely pointed, and the hindwings more acutely pointed.

T. fuscipunctella Haw.—Dyar's List, p. 571, No. 6503.—Palpi pale ochreous, labials fuscous externally. Head ochreous russet, intermixed with brown. Antennæ brown. Thorax ochreous brown, darker anterior. Forewings elongate, pointed, pale ochreous, overlaid in varying density with dark brown, with some lustre; costa dark fuscous, with numerous but rather minute pale dots, at times entirely obsolete, except towards the apex; the fuscous coloring predominates above the fold, a dash along the latter. Stigmata very pronounced, second discal large; an oblique bar from base of costa to fold, extending thence perpendicularly to dorsal margin, forming thus a semi-circle. Cilia ochreous, more or less spotted with fuscous. Hindwings as wide as the forewings, grayish, with brassy lustre. Cilia grayish. Abdomen above, ochreous brown. Underside of body and legs ochreous, more or less tinged with fuscous.

Exp. 11.0–17.0 mm.

Hab.—Europe; North America, etc., nearly cosmopolitan. Specimens occur, especially from the western part of our country, in which the forewings are almost entirely pale ochreous, the dark scales reduced to the stigmata, plical dash and basal semi circular spot.

T. apicimaculella Ch.—Dyar's List, p. 570, No. 6492.—"Antennæ and outer surface of the palpi brown, inner surface of the palpi and the apex yellow; head sordid yellowish; thorax and forewings above the fold yellowish and dusted with fuscous so as to obscure the ground color; there is a large brown spot about the middle of the wing and one at the end of the disc and behind it, the apical part of the wing is marked with more or less obliquely transverse rows of small dark brown spots; beneath the fold the wing is but little suffused with fuscous. Al. ex. ½ inch."

The above is Chamber's description, and while I entertain no doubt of the identification of the species, the description may be amplified, and to some extent modified, as follows:

Second joint of labial palpi strongly roughened beneath with dark brown scales. In all specimens before me the thorax, except apices of patagia, dark purple-brown; the dusting in costal half of forewing consists of a well-marked stripe extending from base to apex, above it, except costa, the dusting is less dense and becomes more evanescent beyond the middle; the longitudinal stripe expands toward the costa before the apex; "the obliquely-transverse rows of

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small, dark brown spots" are difficult to identify, though fairly well marked in one specimen, what is marked, however, are a row of large spots surrounding the apex, and from these extend dark lines along the veins. The spot in middle of wing is on the fold.

Exp. 11.0-14.5 mm.; 0.44-0.58 inch.

Hab.—Kentucky; New Jersey (Montclair); District of Columbia; Kansas (Onaga); Georgia (Forsyth); Florida (Hastings); Missouri (St. Louis); Louisiana (Vowells' Mills).

T. orleansella Ch.—Dyar's List, p. 572, No. 6519.—"Straw color or pale yellowish, thickly dusted with fuscous; a discal fuscous spot about the middle of the wing, and another opposite to it on the dorsal margin; a row of dark brown spots around the apex, a dark brown spot on the base of the costa and an obscure one at the inner angle; the apical portion of the wing is thickly dusted. Antennæ grayish stramineous; head and palpi sordid stramineous, the outer surface of the palpi brown. Al. ex. ⅝ inch."

Hab.—Louisiana (New Orleans, in November).

The above is Mr. Chamber's description. The type, in very poor condition, is in the Cambridge Museum collection. Seems to correspond in size and form of wings with *trimaculella* Ch; there is a heavy dash in the fold, middle of wing length; this, no doubt, is the spot referred to by Chambers on the dorsal margin; the discal spot is smaller and a little nearer the base than the former; second discal (not mentioned in the description) is distinct and somewhat transverse, along the costal margin are some hamate spots and dots, fuscous in color. Labeled by Chambers.

T. straminiella Ch.--Dyar's List, p. 573, No. 6528.--"Head sordid yellowish; palpi, antennæ, thorax and anterior wings straw color; palpi brownish externally; sides of thorax behind the eyes brown; a row of small brown spots along the fold, another at the end of the disk. Apex dusted with brown. Al. ex. ½ inch."

Hab.—Kentucky (in June).

Have not seen anything to correspond with the above description.

T. bimaculella Ch.—Dyar's List, p. 571, No. 6496.—Palpi pale yellow, second joint of labials brownish externally, fringed with setæ along its entire lower edge. Head yellowish. Antennæ pale yellowish, indistinctly annulate with pale fuscous above. Thorax pale yellow, patagia brown. Forewings rather narrow, pointed, pale yellow, supra-plical part of wing overlaid with brownish scales, except a stripe which starts broadly on the costa before the apex and extending obliquely to beginning of dorsal cilia where it connects with the yellow subplical part of the wing; on the fold are three or four dark brown spots which extend to some extent into the pale yellow below the fold; a less distinct spot at end of cell. Cilia pale yellow, speckled with fuscous scales. Hindwings nar-

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rower than the forewings, pointed, grayish. Cilia concolorous, ochreous towards the base. Abdomen fuscous above; underside of body and legs yellowish, anterior and middle tibiæ and tarsi tinged with fuscous.

Exp. 8.0-9.5 mm.; 0.32-0.38 inch.

Hab.—Kentucky; Pennsylvania (Hazleton); New Jersey (Essex County).

The above description is somewhat at variance with Mr. Chamber's description; he describes the thorax as entirely black—this is not so. I have seen his type in Cambridge, which fully agrees with specimens in my collection, and one of which had been determined for me by Lord Walsingham. It is one of our smallest species.

T. trimaculella Ch.—Dyar's List, p. 572, No. 6525.—"Pale stramineous, the head a shade deeper yellow; thorax and primaries dusted with pale fuscous; two small fuscous spots upon the disc about the middle, the one nearest the costal margin being the most indistinct, and a third one more distinct at the end of the disc; posterior wings shining pale or whitish yellow. Alar ex. $\frac{7}{16}$ inch. Kentucky."

The above description (Chambers) tallies well with specimens in my collection, although the discal spot nearer the costa is certainly not less distinct than the plical spot. The palpi robust, third joint coniform, second joint roughened beneath with scales, entirely ochreous fuscous, paler at the apex; the dark dusting of forewings more pronounced along the costa and in the apical part of the wing, leaving the veins in the latter rather free; costal part of base dark fuscous. Antennæ pale fuscous. Underside of body and legs yellowish, anterior and middle tibiæ and tarsi dark brownish fuscous, those of hind legs paler; tarsal joints paler at apex.

The specimens before me expand 13.0–14.0 mm., which is somewhat in excess of that given by the author.

Hab.—Kentucky; Washington, D. C. The specimens before me were received from Mr. A. Busck.

T. carnariella Clem.—Dyar's List, p. 571, No. 6497.

Dr. Clemens give the following description:

"Palpi dark brown. Head and front rather dark ochreous, tinged with reddish. Forewings pale yellowish brown, dusted with fuscous, especially at the costal portion of the base; with a conspicuous dark brown spot on the end of the disc, with two smaller spots of the same hue between this and the base of the wing, one about the middle of the disc, and the other beneath it in the submedian fold; fringes unicolorous and rather paler than the general hue. Hindwings pale bluish gray; fringes somewhat darker. Exp. al. 5.50 to 7.50 lines; 18.0 mm."

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As already pointed out by Mr. Busck,* this species is entirely distinct from *pellionella* L.; the type at the Academy of Natural Sciences of Philadelphia is in good condition (one pair of wings only); the fuscous dustings of the forewings especially along the costa and in the apical portion; the spot at end of cell is transverse. Similar to *grumella* Zell., which it also resembles in the pale lines in the apical part of the wing, but it lacks the marginal spots of that species and the plical spot is absent; aside from these, it is an altogether darker species; veins 7 and 8 of forewing are stemmed.

T. griseella Ch.—Dyar's List, p. 572, No. 6520, syn.—"Palpi brown; head and antennæ sordid yellowish gray; head and antennæ brownish gray, with a small brownish spot within the dorsal margin before the middle, another still more faint on the disc, and a more distinct one at end of the disc. Alar. ex. $\frac{5}{16}$ inch. Kentucky."

The above is Chambers' description of a species which has heretofore been referred to in our lists as a synonym of *pellionella* L. However, since I have examined the type in the Cambridge Museum collection, I must consider it a distinct species which does not tally well with the author's description, and which therefore I take leave to supplement as follows:

Labial palpi ochreous, tinted with fuscous without, third joint fuscous within. Head ochreous russet. Forewings like those of *pelliomella* in shape, sordid ochreous, with numerous, irregular transverse lines, more distinct in outer half of wing; a dark dash immediately below the fold at two-thirds of its length, an ill-defined, slightly curved line in the subplical space at two-fifths of the fold; hindwings over 1, costa scarcely emarginate; second discal spot distinct. The dash below the fold is no doubt the "small brownish spot within the dorsal margin.

T. grumella Zell.—Dyar's List, p. 572, No. 6570.—Maxiliary and labial palpi ochreous, the latter of moderate length, slender; terminal joint one-half as long as the second, the latter fuscous above and beneath. Head dark russet; antennæ pale furcous above, paler beneath. Thorax ochreous, dusted with fuscous and having a somewhat metallic lustre; patagia dark brown at base. Forewings elongate, pale grayish ochreous, thinly dusted with fuscous, with considerable lustre, extreme costa dark fuscous towards the base, the dusting more dense from the base of costal half of wing, the part beyond the cell evenly and thinly dusted, with pale lines corresponding to the veins. A large transverse spot at end of cell and from which a dark shade extends to both margins; midway between this spot and base of wing is a small first discal dot, nearer to costa than dorsal margin; at two-thirds of the fold is a spot which extends as a line towards the base; subplical space very thinly dusted with dark scales; a row of distinct, dark spots along the base of the costal and dorsal cilia, latter pale fus-

* Trans. Ent. Soc. Wash., Vol. V, p. 185.

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cous, nearly concolorous. Hindwings a little wider than the forewings, costa slightly emarginate towards the apex, pale gray, with yellowish tint; cilia concolorous. Abdomen above, underside of body and legs pale ochreous, more or less tinged with fuscous.

Exp. 14.0-16.0 mm.; 0.56–0.64 inch.

Hab.—Massachusetts (Zeller); Maine (Orr's Island); Washington (Pullman).

Specimens in my collection from Orr's Island have the head a trifle more reddish than those from the last mentioned locality. Its close relationship to *carnariella* has been referred to under that species.

T. pellionella L.—Dyar's List, p. 572, No. 6520.—Palpi sordid pale ochreous, dusted with fuscous. Head ochreous or reddish ochreous. Forewings elongate, pointed, and like the thorax pale grayish ochreous, more or less dusted with fuscous, especially along the costa and in apical part of wing; stigmata generally distinct, first discal and plical spots smaller, sometimes linear or obsolete, second discal rounded, well marked. Cilia grayish, dusted with fuscous along the base. Hindwings over 1, pale gray, tinted with yellowish; cilia concolorous. Underside of body and legs pale grayish ochreous, tinged with fuscous.

Exp. 10.0–15.0 mm.; 0.4-0.6 inch.

Hab.—North America, Europe.

Mr. Meyrick gives the expansion as 10–13 mm. The larger specimens before me correspond in some respects to the description of *pallescentella* St.; one of these has a pale dash immediately before and behind the second dorsal spot, but there are no whitish spots beyond as in the latter species.

The species varies considerably in appearance according to the greater or lesser density of fuscous dusting. A specimen in my collection is of an almost uniform dark fuscous color and strong, somewhat metallic lustre; first discal and plical spots obsolete. I do not feel warranted to consider it distinct. but appears to be a well marked variety.

T. misceella Ch.—Dyar's List, p. 572, No. 6515.—"Head and palpi pale yellowish; antennæ pale fuscous; thorax and primaries fuscous and saffron yellow, intermixed in almost equal quantities, the fuscous scales being sometimes aggregated into small spots, one of which is about the end of the disc and a larger one is near the base. Alar ex. ⅝ inch. Kentucky."

The above is the author's short description of this species. The type is in Cambridge, in poor condition and not spread; there is a rather well-marked dash on the fold just before the middle, which is not mentioned, unless, indeed, this should represent the "larger spot

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near the base" in the author's description, of which I could not see any evidence. The head and thorax in this specimen is sordid ochreous, the latter darker anteriorly. It is about the size of a small *pellionella.*

Occidentella Group.

The few species comprising this group are moths of more than average size; head yellowish or white, color of forewings brown, with more or less white; stigmata distinct. Hindwings as wide as the forewings, costa not retuse.

They are distinguished as follows:

With dark purple line from middle of costa to end of disk.....**behrensella.**
Without such a line.
Second discal spot transverse; plical spot before the middle.
occidentella.
Second discal spot round, plical spot not before the middle..**tuscanella.**

T. behrensella Ch.--Dyar's List, p. 570, No. 6494.—"Palpi yellowish; hairs of the face and vertex yellowish, mixed with some of a darker hue; antennæ fuscous, silvery tinged; primaries brownish, suffused with pale purple, and paler towards the dorsal margin, a reddish or purplish brown line extends along the costal margin to about the middle, when it leaves the margin, passing backwards to the end of the disc, becoming, also, wider; apical part of the wing pale purple, or purple-slate color, with white scales intermixed; cilia pale straw color; under surface and legs whitish, except the anterior surfaces of the first and second pairs of legs, which are brown, annulate with yellowish white at the joints. Al. ex. ¾ inch. Named for Mr. J. Behrens, of San Francisco, from whom I received it."

This is the author's description, to which I have nothing to add, as the insect is not known to me in nature. I place this species tentatively into the present group.

T. occidentella Ch.—Dyar's List, p. 573, No. 6532.—Palpi fuscous brown, outer half of terminal joint of labials whitish. Head creamy-white. Antennæ deep fuscous, basal joint white. Thorax dark brown; anterior part, except patagia, white. Forewings moderately wide, obtusely pointed, ground color creamy-white, overlaid with dark brown or almost black, the latter most dense in basal two-fifths and in the apical part of the wing, also more or less along the margins; on the apical third of costa are four or five short oblique lines which extend into the cilia; a large, somewhat transverse spot at end of cell, another well marked and nearly rectangular; on the fold before the middle extending as a streak towards the base, immediately exterior to these spots, the white ground color appears as a more or less conspicuous white spot or dash. Cilia fuscous, traversed by several pale lines in costal and dorsal portion. Hindwings fully as wide as forewing, obtusely rounded at apex, gray, dusted with fuscous and with an ochreous tinge; cilia gray. Abdomen grayish fuscous above, underside of

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body and hind legs grayish ochreous; anterior and middle legs fuscous, tarsal joints pale at apex.

Exp. 18.0–19.5 mm.; 0.72–0.78 inch.

Hab.—California (Pasadena).

A number of specimens in my collection. Erroneously referred to *Trichophaga* in Dr. Dyar's List.

T. tuscanella n. sp.—Palpi whitish, labials rather thick, dusted with fuscous, terminal joint rather short, obtuse. Head creamy-white, slightly yellowish in front and a few tufts of brown upon the face. Antennæ fuscous brown, paler beneath, basal joint whitish. Thorax brown, enclosing a large oval patch of white anteriorly. Wings a little narrower than in *occidentella*. Forewings whitish, overlaid with brown scales; which are most dense in the dorsal and apical portions of the wing, less along the margins and adjacent parts, the space surrounding the second discal spot being the most sparsely dusted portion of the wing; plical spot distinct, about middle of wing length, first discal obsolete, second distinct, rounded. Cilia whitish ochreous in basal half, outer half brownish, separated by a dark dividing line, another less well-marked line in the outer half; the whole sparsely speckled with brown scales; underside pale fuscous. Hindwings as wide as forewings, rather pointed, pale silvery gray, margins fuscous and apical part rather densely dusted with darker scales; cilia pale yellowish; underside deep ochreous towards the dorsal margin. Abdomen ochreous fuscous, paler on the sides above. Legs pale ochreous, anterior two pairs tinged with fuscous, tarsi annulate with dark.

Exp. 17.0 mm.; 0.68 inch.

Hab.—Arizona (Tuscan).

Very closely related to *occidentella*, from which it differs by its narrower wings, the dusting rather brown than blackish, the plical spot farther from the base and the cilia pale at base.

Croceocapitella Group.

The species which I have included in this group have forewings deep fuscous or purplish brown; stigmata either entirely obsolete, or at least the first discal absent. Hindwings as wide or wider than the forewings, rarely (*xanthostictella*) narrower; costa not or very feebly retuse toward the apex. Only in one species (*mandarinella*) is the dorsal part of forewing yellow.

Thus defined, the species may be tabulated as follows:

Forewings unicolous; no pale spots.
Thorax unicolorous; dark brown ..... **croceoverticella.**
Thorax not unicolorous.
With entire ochreous stripe..... **thoracestrigella.**
With ochreous spot anteriorly..... **vicinella.**

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Forewings with pale spots or lines.
  Without marginal spots.
    Head whitish or russet yellow.
      Spot at end of cell.
        Head russet-yellow ..... **unomaculella.**
        Head whitish ..... **niveocapitella.**
      Without spot at end of cell ..... **leucocapitella.**
    Head dark fuscous ..... **seminolella.**
  With marginal spots.
    No transverse lines or fascia.
      Spots numerous ..... **ophrionella.**
      Yellow spot at anal angle ..... **xanthostictella.**
    With entire transverse fascia ..... **imitatorella.**
Dorsal part of forewings yellow ..... **mandarinella.**

T. croceoverticella Ch.—Dyar's List, p. 571, No. 6500.—"Dark brown, in some lights strongly bronzed, head saffron colored; antennæ dark brown; palpi a little paler than the head; under surface silvery whitish, faintly tinged with golden yellow; wings rather wide; cilia grayish, with two brown hinder marginal lines, one at their base, the other beyond their middle. Al. ex. a little over ½ inch. Kentucky."

I have but little to add to Chambers' description; there is a dark brown spot on the second and third joints of the labial palpi externally; antennæ annulate with pale. The dark bronzed brown uniform color of the forewings is intermixed with paler filiform scales. Hindwings wider than the forewings, purplish brown; cilia brown. Some specimens have the antennæ thickened with verticillate scales. Not easily confounded with any other species known to me. The type is in Cambridge.

Exp. 10.0–12.0 mm.; 0.4–0.48 inch.

Hab.—Kentucky, Kansas (Onaga); Maryland (Plummers Isl.); Ohio (Cincinnati).

T. thoracestrigella Ch.—Dyar's List, p. 572, No. 6523.

Mr. Chambers describes this species as follows:

"Much like the above (*croceoverticella*), but larger, having an al. ex. of more than ¾ of an inch. The forewings are simply dark brown, without bronzy reflection; and so are the cilia, which show no hinder marginal line; the hindwings also are brown, though paler than the forewings. The head is more reddish saffron, and a line of that color extends from the head to the tip of the thorax. Otherwise it resembles the species above described (*croceoverticella*)."

Not known to me in nature.

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T. vicinella n. sp.—Labial palpi dark brown. Head, basal joint of antennæ and large oval spot on anterior part of thorax saffron-yellow, remainder of thorax and antennæ dark, coffee-brown, latter rather thick, joints closely set, without scales. Forewings rather elongate, uniformly dark coffee-brown, with some lustre; on the fold the dark is intensified and along it is a row of large whitish scales; some similar scales on the disc beyond the middle. Cilia brown. Hindwings fully as wide as the forewings, costa not retuse, pale fuscous, with some brassy lustre; underside of wings fuscous, hindwings paler. Abdomen above, body beneath and legs sordid ochreous, dusted with fuscous; anterior and middle legs dark fuscous, tarsal joints paler at the apex.

Exp. 20.0 mm.; 0.8 inch.

Hab.—Florida (Gotha).

A male specimen, not in very good condition, in my collection. Its nearest ally is *thoracestrigella*, but larger. In size it comes close to *leucocapitella*, but the head is distinctly yellow, lacks the plical spot of that species and has a large yellow spot on the thorax.

T. unomaculella Ch.—Dyar's List, p. 573, No. 6526.—"Thorax and forewings dark brown, with a yellowish spot at the end of the cell; antennæ and outer suface of the labial palpi brown, inner surface and apex yellowish; head and maxillary palpi yellowish, under surface and legs yellowish, marked with fuscous. Al. ex. ⅝ inch. Texas."

The type, an unspread specimen, but otherwise in good condition, is in Cambridge; beside the spot at end of cell, there is a semi circular spot, at two thirds of the fold and seven or eight spots at the base of the cilia. The palpi rather thick, third joint obtuse. In a specimen in my collection the plical spot is obsolete on one wing.

T. niveocapitella Ch.—Dyar's List, p. 572, No. 6516.—"Dark brown: there is a small pale ochreous or whitish spot just within the dorsal margin, placed about midway of the wing length and margined before by black scales; head very pale yellowish white; maxillary palpi fuscous, labial palpi dark brown, the third joint tipped with pale yellowish or white. Al. ex. 7 lines. California."

I have not seen this species; it appears to be very closely allied to *leucocapitella* and *vicinella*, but smaller. More extensive material may prove them to be mere varieties of the species under consideration.

T. leucocapitella Busck.—Proc. U. S. Nat. Mus., Vol. XXVII, 776.

This species, of which I have been permitted to see the type, is very closely related to *niveocapitella* Ch., from which, to judge by the description of the latter alone, it appears to differ by its larger size (22.5 mm.); and the absence of the pale spot at end of cell; the palpi are wanting. In both species the spot on the fold is midway

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of wing length and margined towards the base with deep blackish scales.

Hab.—Washington (Pullman).

T. seminolella Beut.—Dyar's List, p. 572, No. 6521.—"Head, thorax and palpi deep fuscous. Primaries fuscous, covered with deep fuscous scales; without any markings except an indistinct blackish discal spot with a pale margin. Legs, body, secondaries and wings beneath fuscous."

Exp. 17.0 mm.

Hab.—Central Florida.

The type of this species, a female, is in the U. S. Mus. collection. I have not seen it.

T. ophrionella n. sp.—Pl. III, fig. 6.—Palpi creamy yellow, labials brown externally, except apical half of third joint, dusted with fuscous within. Head ochreous yellow. Antennæ of moderate thickness, grayish fuscous above, paler beneath, basal joint yellowish white. Thorax purplish brown. Patagia edged with white externally. Forewings broad, costa curved gradually from the base and equally so towards the apex; purple-brown and marked with rather large, whitish spots; before the middle are two costal spots, of which the first is less distinct and more oblique, and about midway between the base and the second spot, the latter nearly perpendicular to the margin and more distinct, these two spots extend to about one-third the wing breath, from the middle to apex are five costal spots, distinct but narrower than the preceding, the first two of these point obliquely backward, the other three obliquely forward, strictly speaking these spots, especially the outer ones, are confined to the costal cilia; a spot on the dorsal margin at beginning of cilia, another at one-fourth; within the dorsal margin are two spots, one of these between the preceding two spots, just touching the margin, the other nearer the base; another large spot very near the base, a little nearer to the costa. Cilia dark brown, with five white lines in costal portion—mentioned above—and two in the dorsal part. Underside fuscous, faintly showing markings of upper side. Hindwings fuscous, with purple lustre; cilia concolorous. Abdomen fuscous above; underside of body and legs grayish ochreous, dusted with fuscous.

Exp. 14.0 mm.; 0.56 inch.

Hab.—New York (Ithaca).

A single ♂ specimen in my collection. The rather wide forewings and general habitus give the insect the appearance of an *Incurvaria*, however, the antennæ of the male are simple.

T. xanthostictella n. sp.—Palpi pale yellowish, labials spotted externally with fuscous. Head saffron-yellow. Antennæ rather stout (♂), with verticillate scales, grayish fuscous above, paler beneath. Thorax pale yellow, with lustre, patagia dark bronzy brown. Forewings rather wide, uniformly brown, somewhat darker in the basal portion; a bright sulphur-yellow spot at the anal angle; cilia grayish fuscous. Hindwings a trifle narrower than the forewings, costa not retuse, grayish fuscous, with some lustre. Cilia concolorous. Abdomen

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above, fuscous brown; sexual armature yellowish. Underside of body and legs yellowish, tinged, and tibiæ and tarsi more or less spotted, with fuscous brown.

Exp. 10.0 mm.; 0.4 inch.

Hab.—Georgia (Forsyth).

A male specimen in my collection. Easily recognized by its general brown color and the yellow spot at the anal angle. The claspers are large, spoon shaped, uncus simply curved.

T. imitatorella Ch.—Dyar's List, p. 572, No. 6508.

Mr. Chambers does not give a description of this species, except by reference to his *Tinea* (*Eudarcia*) *cæmitariella*, saying that it agrees with the description given of that species, to which he adds, that the palpi and legs are rather silvery gray, or gray, with blackish markings on the legs; also, that the antennæ in *cæmitariella* are robust and yellow, banded above with fuscous lines, while those of *imitatorella* are quite slender and shining black. The larval case of *cæmitariella* is much depressed, narrowed before each end, that is, scalloped on each side before each end, the under side truncated at each end and the upper projecting like the bowl of a spoon beyond it; the case of *imitatorella* is scarcely at all depressed, it is not scalloped as in *cæmitariella*, the upper side does not project beyond the lower, and the anterior end is narrower than the posterior one.

T. mandarinella n. sp.—Pl. III, fig. 1.—Palpi pale yellowish white, labials tinged with fuscous beneath. Head russet-yellow. Antennæ slender, fuscous brown above, grayish beneath. Thorax grayish fuscous, patagia deep brown. Abdomen fuscous above, paler at the base. Forewings elongate, deep maroon-brown, costa dark brown; dorsal part of wing yellow for three-fifths its length, sinuous along its costal border and sprinkled with dark brown scales; about the middle of wing length the dark portion projects as a conspicuous spot into the yellow part; a yellow spot on the costa before the apex; costal cilia dark brown, with a yellow line corresponding with the costal spot; apical and dorsal cilia divided into three tiers, the basal part concolorous with wing, second tier paler, and the third pale yellow as is likewise the beginning of the dorsal cilia. Hindwings ovate-lanceolate, costa slightly retuse in outer half, dark fuscous with feeble brassy lustre; cilia 1½, concolorous. Underside of fore- and hindwings fuscous brown. Underside of thorax and legs yellowish, dusted with fuscous; tarsal joints spotted with fuscous.

Exp. 7.5 mm.; 0.3 inch.

Hab.—Ohio (Cincinnati).

A single male specimen of this very interesting addition to our Tineid fauna was sent me for study by Mr. A. Busck. A very dis-

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tinct species not closely allied to any of our known Tineæ. In general appearance it resembles, perhaps most, *Isocorypha mediostriatella*; in a minor degree *Tinea bimaculel a*, and to judge from the description, seems to have a suspicious close resemblance to the European *Relicinella* H. S., though much smaller.

Oregonella Group.

A small number of species are included in this group, which is characterized by the wing markings, consisting predominantly of longitudinal streaks or lines. The forewings are elongate. Hindwings not as wide as the former, with the costa distinctly emarginate beyond the middle.

The species are distinguished as follows:

Forewings white, markings dark; veins 4 and 5 of hindwing free.
Costal spot not extending into disc ..... **roburella.**
Two longitudinal streaks through the disc..... **oregonella.**
Numerous longitudinal lines..... **multistriatella.**
Forewings dark brown; veins 4 and 5 of hindwings stemmed..... **Rileyi.**

T. roburella n. sp.—Pl. II, fig. 3.—Palpi yellowish white, labials dark brown externally, except at the apex, second joint roughened beneath, with dark brown scales. Head sordid white, with a fuscous spot on the vertex. Antennæ robust (♂), somewhat flattened, sordid white and dotted with fuscous above. Thorax sordid white, speckled with, and patagia anteriorly, fuscous. Forewings moderately elongate, whitish, suffused with pale brown from before the middle, with dark, seal-brown marginal spots and several longitudinal streaks, a spot at base of costa, a small oblique one at one-fourth, a large quadrate spot about middle of costa, extending into the disc and sending a prolongation, both towards the base and towards the apex, the latter extends as a streak, becoming wider outwardly and connects with the costal spot immediately before the apex; beyond the large median spot are four spots, alternately large and small, and immediately before the apex two connected spots, a spot at middle of dorsal margin, the latter along base of cilia is dark brown, more or less interrupted; an undulating streak, which commences below middle of fold and extends towards the apex, which, however, it does not attain, basal part of wing and the space below the undulating streak is faintly irrorated with pale brown. Cilia whitish, with rather wide dividing line about their middle, speckled and barred with brown correspondingly to marginal markings. Hindwings under 1, costa distinctly emarginate, grayish fuscous; cilia gray, with a sprinkling of fuscous scales. Underside of wings brown. Abdomen above fuscous; body beneath and legs ochreous white; tibiæ externally and tarsal joints above, except at apex, fuscous.
Exp. 13.0 mm.; 0.42 inch.

Hab.—New Jersey (Essex County). A male specimen in my collection, kindly given me by Mr. W. D. Kearfott.

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T. oregonella Busck.—Dyar's List, p. 572, No. 6518.

Bred in large numbers from a fungus by Mr. A Busck. Readily recognized by its rusty white wings, with several, wide, dark brown longitudinal streaks, of which one on the fold, reaching from base to apical third of wing, and one in the middle of the wing, reaching from basal third to apex are the most conspicuous; a less conspicuous streak along basal third of both margins; some irregular spots along costal margin, and a row of connected spots along base of dorsal cilia. Cilia whitish, with brown dividing line about their middle and some scattered brown scales. Hindwings grayish fuscous; narrower than the forewings, costa emarginate beyond middle; cilia gray, yellowish at base.

Exp. 15.0–17.0 mm.; 0.6–0.8 inch.

Hab.—Oregon.

T. multistriatella n. sp.—Pl. II, fig. 5.—Palpi yellowish white, labials externally, except at apex, dark brown. Hair of face whitish, rather appressed, on the vertex sordid white, intermixed with brown in the middle. Antennæ moderately robust, scarcely one-half the wing length, brownish above, paler beneath, basal joint whitish. Thorax white and fuscous intermixed. Forewings elongate, pointed, white, with dark brown marginal spots and numerous longitudinal communicating lines, without lustre; a large elongate spot about middle of costa, before it several smaller spots, and beyond it about five spots, decreasing in size; a row of dots along base of dorsal cilia, forming an almost uninterrupted line, a distinct spot at beginning of dorsal cilia; the space between the longitudinal lines is sparsely sprinkled with brown scales. Cilia ochreous brown, with an indistinct dividing line about the middle, the basal half being more grayish, the outer half more ochreous, with dark bars, corresponding to the marginal spots. Hindwings under 1, costa emarginate in apical two-fifths, pointed, pale grayish white, speckled with fuscous scales; cilia concolorous, pale ochreous at base. Abdomen ochreous fuscous above, reddish ochreous brown beneath. Legs ochreous white, dusted with fuscous, especially anterior and middle pair; tarsal joints paler at apex.

Exp. 16.0-17.5 mm.; 0.64-0.7 inch.

Hab.—Canada (Toronto); Maryland (Plummers Island).

Specimens in my collection were bred from a fungus, growing on beech stumps. A specimen from the second locality was taken by Mr. A. Busck in May, 1903. A specimen in poor condition, collected by Chambers, labeled "*Tinea* sp.," but without locality, is in the Cambridge Musuem. Very closely related to *oregonella*.

T. rileyi n. sp.—Maxillary palpi grayish white; labial palpi dark fuscous externally, sordid white, dusted with fuscous within. Head and thorax dark brown, patagia speckled with white. Antennæ pale ochreous fuscous. Fore-

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wings elongate, a deep rich golden brown, traversed by white longitudinal lines; extreme costa and dorsal margin pale, several lines, more or less communicating, in costal part of wing, two other lines arise from middle of base, run parallel through the disc to about the posterior angle of cell, another line begins beyond middle of dorsal margin, is curved, touches the dorsal margin some distance before the apex and ends immediately below it. Periapical cilia dark brown, traversed by four, sharply defined white lines, remainder white, with some scattered, brown scales. Hindwings gray, cilia concolorous; underside of wings pale fuscous gray. Abdomen above, body beneath and legs ochreous, more or less tinged with fuscous; tarsal joints pale at apex.

Exp. 10.0–14.5 mm.; 0.4–9.58 inch.

Hab.—District of Columbia; Florida (Hastings); Pennsylvania (Hazleton).

This species was bred by the late Dr. Riley, from fungus; and after whom it was named by Lord Walsingham, but never described. I gladly retain the name by which it is known in our collections. It has veins 4 and 5 of hindwing stalked.

Defectella Group.

A number of species belong here. Color of forewings white, rarely ochreous brown (*cloacella*), with dark brown markings. Hindwings narrower than the forewings; outer half or two fifths of costa distinctly retuse. The wings are generally elongate, pointed; more rarely moderately wide, and become towards the end of the series, especially the hindwings, almost lanceolate. The characters used in the synoptic table of species may not always be definite enough to convey to the student a concise concept, but it is hoped that these, with the descriptions and illustrations, will enable him to determine his material with reasonable certainty.

The species are distinguished as follows:

Large costal spot before or about the middle of forewing, extending into the disc.
A dorsal spot before the middle, which forms with the costal spot a more or less complete fascia.
Dorsal spot commences on the margin.
Fascia wide, not angulated externally, head ochreous..**molybdanella.**
Fascia angulated externally, head white.
Angle of fascia extends towards end of cell .....**geniculatella.**
Angle of fascia not extended.
Dorsal spot very conspicuous, widest on the margin; heavy streak on basal fourth of costa ..... **arcella.**
Dorsal spot inconspicuous, base of costa simply spotted.
Forewings with lustre, markings dark brown; without spot at end of cell .....**auripulvella.**
Forewings dull; markings pale brown, inconspicuous; spot at end of cell .....**acapnopennella.**

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Dorsal spot commences within the margin.
Oblique line in apical part of wing ..... **defectella.**
Without such a line.
Apex of forewings black ..... **apicisignatella.**
Apex of forewings not black ..... **angulifasciella.**
Without such dorsal spot.
With two oblique costal streaks.
Spots in outer half of wing large, confluent ..... **marmorella.**
Spots not confluent.
Dorsal margin with two well-marked spots ..... **fuscomaculella.**
Dorsal margin with numerous dots ..... **granella.**
With one costal streak.
Forewings yellowish brown; head yellow ..... **cloacella.**
Head not yellow.
A curved line in outer half of wing ..... **interstitiella.**
Without such a line ..... **fulvisuffusella.**
Costal spots not extending into disc.
Two longitudinal dashes in apical part of wing ..... **maculabella.**
Without such dashes.
Marginal spots very conspicuous ..... **marginimaculella.**
Marginal spots inconspicuous.
Speckled with dark brown spots or scales, scales aggregated into several discal spots ..... **fuscopulvella.**
Forming two, more or less complete, entire fascias ... **nigroatomella.**

T. molybdanella n. sp.—Pl. III, fig. 7.—Maxillary palpi and labials within sordid ochreous, the latter externally, except at the apex, dark brown, terminal joint small, scarcely one-half the length of the second. Head grayish ochreous, intermixed with fuscous, before the insertion of the antennæ; the latter slender (♀), fuscous. Thorax grayish ochreous, speckled with fuscous and an irregular, ill-defined stripe each side of dark brown scales. Forewings moderately wide, a leaden, grayish white, lustrous, markings blackish brown; costa irregularly dark fuscous almost to the median fascia, the latter begins about middle of costa, rather wide and extends somewhat obliquely backwards until it adjoins a large quadrate spot at one-third of the dorsal margin, forming thus a wide, entire fascia, scarcely at all angulated externally, a curved line, of more or less connected spots beginning at the median fascia and about one-third from the costa and reaching a large double spot on the costa before the apex, on the costa between the last mentioned spot and the median band are two large triangular spots, and alternating with them three small round dots; the marginal spots in the apical part of the wing are large and coalesce with the dark brown color of the disc; the entire dorsal margin is irregularly spotted; a dash in basal part of fold. Cilia sordid ashen-gray, irregularly dotted and barred with dark fuscous. Hindwings under 1, deep leaden gray, dusted with fuscous. Abdomen above dark fuscous; underside of body and legs ochreous, anterior and middle legs externally and tarsal joints above, except at apex, fuscous.

Exp. 14.0–17.0 mm.; 0.56–0.68 inch.

Hab.—California (Pasadena).

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Two specimens in my collection. Its nearest allies are *defectella* and *geniculatella*, from both of which the present species differs by its leaden-gray color and the median band not angulated externally.

T. geniculatella n. sp.—Palpi sordid white, labials above and beneath dark brown, dusted with fuscous, terminal joint rather short, basal half dark fuscous. Head sordid white. Antennæ pale fuscous. Thorax grayish white, patagia fuscous in front. Forewings moderately wide, creamy white, markings blackish brown; a heavy costal streak on basal fourth; a heavy spot at middle of costa, extending less than one-half the wing breadth, where it is joined by a curved line beginning at two-fifths of dorsal margin and forming an acutely angulated fascia, from its angle extends a streak towards end of disc, beyond the fascia are two small costal dots, and just before the apex two large spots, more or less coalescent, and opposite to these a spot on the dorsal margin; a few smaller dots along base of dorsal cilia and a distinct spot at end of disc; some scattered brown scales, especially in apical part of wing. Cilia sordid whitish, with scattered fuscous scales. Hind wings under 1, grayish fuscous, cilia dark fuscous at their base, becoming ochreous gray outwardly. Legs ochreous fuscous. Legs grayish ochreous, dusted and spotted with fuscous.

Exp. 15.0-17.0 mm.; 0.6-0.64 inch.

Hab.—California (Pasadena, Occidental, Kaweah).

Three specimens in my collection from the three mentioned localities. A specimen sent to Lord Walsingham for identification was returned as *T. arcella*, from which, however, it differs by the dorsal spot further removed from the base, a spot at end of cell and a distinct dorsal spot before the apex.

T. arcella Fab.—Pl. II, fig. 6.—Dyar's List, p. 573, No. 6531.—Palpi ochreous white, labials fuscous externally, except at the apex. Head white. Antennæ ochreous white. Thorax white, edged anteriorly with fuscous. Forewings white, somewhat suffused with pale, cream-yellow; markings dark brown, a heavy streak on basal fourth of costa, a large subquadrate costal spot just beyond the middle somewhat oblique outwardly and forming with the dorsal spot a sharply angulated fascia, more or less entire, the dorsal spot almost triangular, just before the middle slightly curved, with its widest part resting on the margin, the apex pointing obliquely outwardly; a costal spot, sometimes wanting, just before and including the apex, some irregular dots along dorsal margin; the white surface sometimes sprinkled with pale brown scales. Cilia white, fuscous correspondingly with marginal spots; underside of wing pale fuscous. Hindwings under 1, grayish, dusted with fuscous towards the apex. Abdomen above ochreous fuscous; underside of body and legs pale ochreous white, tinged with fuscous.

Exp. 11.0-14.0 mm.; 0.44-0.56 inch.

Hab.—Europe, Pennsylvania (Hazleton); New York (Ithaca); District of Columbia, Ohio (Cincinnati); Maryland Plummers Isl.).

A specimen in my collection has the wings infuscate, the brown scales being arranged in irregular transverse lines.

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T. auropulvella Ch.—Dyar's List, p. 570. No. 6491, syn.).

Mr. Chambers describes the species as follows:

"Snowy white, outer surface of the second joint of the labial palpi brown; antennæ yellowish white; primaries very sparsely dusted with pale reddish or brownish golden, except in the apical portion, where the dusting is rather dense, is also thicker near the base of the dorsal margin. A dark brown spot on the costa at the extreme base, another large one on the costa near the base; a smaller costal one just before the middle; a large one just behind the middle reaching to the fold, another small one before the cilia, and five or six small ones extending around the apex at the beginning of the cilia; in some lights these spots are distinctly golden brown. Al. ex. seven-sixteenths. Kentucky."

This species has been referred to in our lists as a synonym of *acapnopennella*, from which it is quite distinct; among Chambers' "types" in Cambridge are three specimens of *acapnopennella*, thus showing that the author did not notice the difference or failed to recognize Clemens' species, which is excusable. Some of Chambers' statements in the description are rather misleading, the large spot just beyond the middle, is quadrate and rarely extends beyond one-half the wing breadth; an inconspicuous spot on the dorsal margin at one fourth, and from which extends a line, more or less interrupted, to the large costal spot; another dorsal spot at beginning of dorsal cilia; the dots along base of cilia are frequently forming a continuous line, here and there interrupted; cilia white, tinted with reddish golden, with a distinct dividing line beyond their middle and a less distinct dark edge, barred with darker lines, preceding from the costal spots. A dark spot on the patagia in front. Hind-wings under 1, pale grayish fuscous. Legs yellowish white; tarsi spotted with fuscous. Exp. 11.5–16.–0 mm.; 0.48–0.64 inch.

Hab.—Kentucky, New York, New Jersey, Pennsylvania (Hazleton). *Auropulvella* differs essentially from *acapnopennella* by its narrower and more pointed wings, its more pronounced markings and golden lustre and lacks the spot at end of cell.

T. acapnopennella Clem.—Dyar's List, p. 570, No. 6513.—Head white, or ochreous white, intermixed with fuscous. Palpi yellowish, labials dusted externally with brownish scales. Antennæ pale ochreous, finely annulate with brown. Thorax sordid white, speckled with brown scales, patagia brown in front. Forewings rather broad, a dull white, sprinkled with pale brown scales in varying density and forming at times irregular transverse lines, or else giving a more suffused appearance; the markings are brown; basal part of extreme costa, an oblique spot near the base reaching to the fold, a somewhat smaller spot at one-fourth, beyond the middle is a large subquadrate spot and opposite to it at the beginning of dorsal cilia, a smaller one, a regularly curved fascia, with the con-

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vexity outward, extends from the costal spot, where it is widest to the above mentioned dorsal spot, where it ends in a point; a little beyond the postmedian costal spot is another quite distinct, and opposite to it, though a little nearer the base, a similar dorsal spot; a row of small dots along base of cilia; a well-marked dash in the middle of the fold, and obliquely outward and above this another longitudinal dash, which ends in the costal end of the curved fascia; a line, more or less distinct, connects the upper dash with the plical, and the latter with the dorsal margin, giving it the appearance of a zig-zag line; a spot at end of disc, beyond which is an aggregation of brown scales and some smaller marginal dots. Cilia whitish, with darker lines corresponding to the marginal spots. Hindwings a little narrower than the forewings, obtusely pointed, grayish fuscous, cilia gray. Abdomen above ochreous fuscous; underside of body and legs ochreous, tinted with fuscous.

Exp. 11.5–14.0 mm.; 0.46–0.56 inch.

Hab.—Pennsylvania; District of Columbia; Maryland (Plummers Island; Louisiana (Vowells Mill).

The description of this species by Dr. Clemens is defective; the type, as stated by the author, being "slightly worn." As, however, the latter is still extant in the Academy of Natural Sciences, Philadelphia, and has been carefully compared with a perfect specimen in my collection—the identification is fully established. The markings appear to vary in extent. A specimen collected by Mr. A. Busck on Plummers Island, and sent me for study, differs markedly by its pure white forewings and the more intense dark markings, the thorax more distinctly speckled with fuscous, and the second joint of the labial palpi is ciliated with blackish hairs. *Tinea minutipulnella* Ch., the type of which I have examined in Cambridge, is a worn specimen of the species under consideration.

T. defectella Zell.--Dyar's List, p. 571, No. 6501.--Palpi yellowish white; labials finely dusted with pale brown. Thorax white, a dark spot each side anteriorly. Forewings elongate, pointed, white, with blackish brown markings and a feeble satiny lustre; marking as follows: extreme base of costa, oblique spot near the base reaching to and becoming wider in the fold, beyond this oblique spot are several smaller costal spots, a large spot on middle of costa, extending obliquely backward to above the fold, where it is joined at an acute angle by an oblique dorsal streak beginning within the margin and at one-third the wing length; beyond the large median spot are two small costal spots, in the apical part of the wing is an oblique stripe, parallel to the outer margin and scalloped within, a row of dots along base of dorsal cilia, a spot on the dorsal margin opposite to the oblique costal spot near the base, another spot near anal angle. Cilia white, with dark median line, costal cilia with three or four fuscous bars, the last of which forms an apical spot, three or four similar bars in dorsal cilia. Hindwings under 1, pointed, gray; cilia concolorous. Legs yellowish white, tinged with fuscous.

Exp. 12.0–15.0 mm.; 0.48–0.6 inch.

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Hab.—California (San Francisco, Kaweah); Arizona (St. Rita Mountains). A specimen sent me by Mr. A. Busck, from the last named locality, was bred from a *Polyporus*. In this specimen the white of the forewings is considerably darkened by fuscous dusting. The apical spot of the forewing, mentioned by Zeller, is in the cilia. The figure of forewing given by the author is relatively too wide. In some specimens the oblique dorsal streak is interrupted before reaching the costal spot, and the latter is, in some specimens, connected with the oblique apical stripe by a row of small dots. This species is closely related to *geniculatella*.

T. apicisignatella n. sp.—Palpi yellowish white, labials rather slender, terminal joint more than half the length of the second, dusted with fuscous externally. Head creamy white. Antennæ slender, grayish fuscous, paler beneath. Forewings elongate pointed, dusted with pale reddish golden, or pale brown scales, markings dark brown, strongly marked; a triangular costal spot at base, reaching the fold, another oblique spot at one-fourth; a large quadrate spot at middle of costa, extending about one-half the wingbreath, beyond this spot are two smaller, though quite distinct spots, the first of which is more or less distinctly connected with the median spot, in such a way as to leave a white costal spot between them, just before the apex is a large triangular spot and opposite to it a smaller one on the dorsal margin, a spot at the extreme apex, a small dot, sometimes wanting, on lower angle of cell; an inconspicuous spot at one-third of and just within the dorsal margin and from which extends an irregularly oblique line to the lower anterior angle of the median costal spot, forming with the latter an angulated fascia; some irregular dots along the dorsal margin; the golden brown scales are more condensed in the apical part of wing and are almost entirely wanting on the subplical part of the wing, cilia whitish with a fine, mesial dividing line and barred with dark brown in the costal portion, pale brown in the dorsal cilia, corresponding with the marginal and apical spots; the white line between the two marginal spots before the apex and the one at the apex is continued obliquely into the cilia and gives it thus a semi-circular appearance. Hindwings under 1, grayish dusted with fuscous, especially towards the apex, cilia paler. Underside of wings grayish fuscous. Abdomen above ochreous fuscous; underside of body and legs ochreous, tinged with fuscous; torsal joints pale at apex.

Exp. 12.0–13.0 mm.; 0.48–0.52 inch.

Hab.—Pennsylvania (Hazleton); New Hampshire (Hampton). A specimen received several years ago from the U. S. Nat. Mus., was labeled *Tinea cloacella* Haw., from which, however, it is quite distinct.

T. angulifasciella n. sp.—Pl. II, fig. 7.—Maxillary and labial palpi within, whitish, the latter externally fuscous except apex of terminal joint. Head rather wide, sordid white. Antennæ rather thick, scarcely exceeding one-half the wing length, sordid ochreous. Thorax white, patagia dark fuscous

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anteriorly, Forewings pure white, markings dark fuscous brown; a small dot at extreme base of costa, an oblique spot very near the base, reaching the fold where it is met by an oblique line extending from a small spot at the anal angle; just before the middle of the wing is a large, oblique spot which reaches the middle of the disc where it forms an acute angle with an equally pronounced spot which begins before the middle and within the dorsal margin; midway between the two last-mentioned costal spots is another costal spot and in the outer half of the wing three more, the last of which extends as a line along the base of the cilia; in the apical part of the wing and nearer the dorsal margin is a streak which becomes bifid before the apex, one branch going to the costal the other to the dorsal margin just before the apex, a number of dots, irregular in size along the dorsal margin, there are some irregular strigulations, especially in inner half of wing and some longitudinal lines in the outer, consisting of dark scales. Cilia white, traversed by three narrow costal and three wider dorsal bars, dark brown in color. Underside fuscous, showing markings of upper side. Hindwings under 1, silvery gray; cilia concolorous with ochreous tinge, underside of body silvery white, tinged with ochreous. Legs yellowish, anterior more or less fuscous externally, femur and tibia of middle pair with fuscous patch externally; tarsi spotted with fuscous.

Exp. 10.5 mm.; 0.42 inch.

Hab.—Maryland (Plummer's Island).

A female speciman, collected by Mr. A. Busck, in the U. S. Nat. Mus. A very distinct species. The labial palpi appear devoid of setæ. Veins 7 and 8 of forewing are stemmed.

T. marmorella Ch.—Dyar's List, p. 572, No. 6512.—"Head and palpi yellowish white; the second joint of the palpi brown on the outer surface. Thorax and forewings white, marbled with dark brown spots which are confluent, the basal fifths being white, except a brown spot on the base of the costa, one on the base of the dorsal margin, one on the fold and one between it and the dorsal margin; in the remainder of the wing the brown prevails; one of these brown spots is on the costa before the middle and reaches the fold and another about the middle of the costa does not quite reach the fold, and behind it along the apex is a row of distinct and separate dark brown spots, five of which are on the costal margin. There is a dark brown hinder marginal line extending through the middle of the dorsal cilia, and the cilia behind it are dusted with black. Al. ex. three-sixteenths inch."

The above is Mr. Chambers' description, to which I have nothing to add. Four specimens in my collection, all in poor condition, I refer with some hesitation to this species. There is a specimen in the U. S. Mus. collection, which, however, I have not seen. Mr. Busck writes me that it is a broad winged species.

T. fuscomaculella Ch.—Pl. III, fig. 2.—Dyar's List, p. 571, No. 6504.—"Gray, flecked and spotted with fuscous, which in some lights appears reddish or brownish golden; one of the spots is at the base of the costa, and opposite to it on the dorsal margin is a smaller one connected with it by scattered fuscous

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scales; a fuscous streak from the costa to the fold, sometimes almost interrupted in the middle; an oblique fuscous streak about the apical third of the wing and a small dorsal spot opposite to it, and another small spot of the same hue near the apex; antennæ silvery gray; face and palpi whitish, outer side of the palpi dusted with fuscous. Al. ex. one-half inch. Kentucky."

Type in good condition in Cambridge. A broad winged species. The forewings are white but rather densely dusted with gray or grayish fuscous. "The fuscous streak from the costa to the fold" is at less than one-third and ends in a heavy streak on the fold, likewise ends the streak "about the apical third" in a longitudinal dash on the disk. In general appearance this species resembles somewhat *granella*, but is quite distinct. The antennæ distinctly over half the wing lengths.

T. granella L.—Dyar's List, p. 571, Nos. 6506 and 6499.—Palpi sordid white, labials externally except at apex, dark fuscous. Head whitish to pale yellow. Antennæ pale fuscous. Thorax fuscous, patagia tipped with whitish. Forewings rather moderately wide; ground color white, overlaid in varying thickness and density, with fuscous or dark brown scales, sometimes almost entirely concealing the ground color; markings dark brown; an oblique spot from base to fold, another at one-fourth, a heavy, oblique spot at middle of costa and reaching to middle of disc, four distinct costal spots beyond the middle becoming somewhat larger outwardly and edged with white on their posterior margin, a heavy streak in middle of fold, another streak in apical part of wing, and a less constant spot on the lower angle of cell; a row of irregular dots along the dorsal margin, those before the cilia often form transverse strigæ. Cilia white, with median dividing line, irregularly barred with fuscous, basal half darker. Hindwings slightly under 1, grayish fuscous, cilia concolorous. Underside of body and legs yellowish white, dusted and spotted with fuscous.

Exp. 8.0–14.0 mm.; 0.32–0.56 inch.

Hab.—Europe; Atlantic States; Ohio (Cincinnati); Iowa.

T. varietella Clem., the type of which I have seen and examined at the Academy of Natural Sciences, Philadelphia, is identical with this species, as already supposed by Mr. Stainton. *Tinea costistrigella* Ch., type in Cambridge is a small form of this species, with nearly white wings. Some years ago I bred a number of specimens from corn; the smaller forms generally have the least of the dark dusting.

T. cloacella Haw.—Dyar's List. p. 573, No. 6525.

Mr. Meyrick gives the following description of this species:

Head whitish ochreous. Forewings ochreous brown, more or less mixed with whitish and strigulated with dark fuscous; a spot on base of costa, another beyond it, a thick oblique spot from costa reaching middle of disc, an elongate

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spot on fold before middle, and some small posterior costal and dorsal spots dark fuscous; a small round whitish posterior spot in disc. Hindwings fuscous.

Exp. 10-17 mm.

Mr. A. Busck very kindly sent me a European specimen of this species for study and which corresponds in all particulars with the description given by European authors of this species. I have not seen any species from within our faunal limits that could be recognized as *cloacella*, nor do I know of the existence of a well authenicated specimen anywhere; a specimen of *Tinea apicisignatella*, which I received as *cloacella*, is certainly not correct. I cannot help, therefore, but to consider the occurrence of *cloacella* in our fauna as very doubtful.

T. interstitiella n. sp.—Palpi ochreous white, labials rather long and slender, the second joint scarcely thickened towards the apex, roughened beneath with scales which, like the outer surface, are dark fuscous. Head and antennæ ochreous white, former intermixed with pale brown hairs. Thorax whitish, speckled, especially on the patagia, with pale brown. Forewings pure white, speckled and spotted with pale golden brown, so as almost to conceal the ground color of the outer three-fifths of the wing; markings, especially on the margins, dark brown; a large, somewhat oblique spot nearly at base of costa, beyond it, before the middle, are two or three, less distinct oblique streaks, beyond the middle is a broad, oblique spot which reaches the middle of the wing, beyond this spot and nearer the apex are a few more costal spots, nearly confluent, a small spot at beginning of dorsal cilia; a nearly uninterrupted line along base of dorsal cilia; a rather large rhomboidal spot below the middle of the fold; the pale golden brown scales, form irregular, undulating transverse lines in the basal two-fifths of the wing; in the outer half of the wing is a curved line about one-third of the width of the wing, from and running parallel with the dorsal margin, and which ends near the apex; apical part of wing rather densely overlaid with pale brown; cilia ochreous white, with brown scales. Hindwings under 1, grayish fuscous, cilia tinged with ochreous. Abdomen, underside of body and legs ochreous, dusted with fuscous; anterior and middle legs fuscous externally, tarsal joints paler at the apex.

Exp. 12.5 mm.; 0.5 inch.

Hab.—Georgia (Forsyth).

A single male specimen in my collection.

T. fulvisuffusella n. sp.—Head and palpi sordid white, faintly yellowish; labial palpi fuscous externally. Antennæ fuscous brown, about half the length of forewings; latter elongate, pointed, white, densely overlaid, except in basal third, with pale golden brown scales intermixed with dark brown, the latter especially in apical part of wing. A dark brown costal spot at base, a small spot at one-fourth; an oblique, triangular spot on middle of costa, reaching to middle of disc, about three costal spots before the apex; a small oblique dash in middle of fold. Costal cilia brown with two darker lines, dorsal cilia sordid white with

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post mesial dividing line, and speckled with fuscous scales. Hindwings under 1, grayish fuscous, cilia concolorous. Abdomen fuscous. Underside of body ochreous, dusted with fuscous. Legs ochreous, spotted and tinged with fuscous. Exp. 11.5 mm.; 0.46 inch.

Hab.—New Hampshire (Hampton).

A specimen in my collection received from Mr. S. A. Shaw.

T. maculabella Ch.—Dyar's List, p. 572, No. 6509.—"Snowy white; maxillary and labial palpi brown, except the inner surface of the labial pairs which is white; antennæ sordid yellowish white; thorax and primaries snowy white, with large, distinct dark brown spots, which in some lights are golden brown; one of these spots is on the anterior margin of the thorax and one on each side before the apex; primaries sparsely dusted with dark brown; a dark brown costal spot at the extreme base and a larger one near the base; another within the one last named on the fold; before the middle is an oblique irregular streak of the same hue reaching the fold and pointing towards a spot of the same hue just within the fold; a small spot of the same hue about the middle of the costa, behind which is an irregular costal streak of the same hue, which extends to the middle of the apical portion of the wing and widens into a large irregular spot; in the apical part of the wing is an indistinct longitudinal dorsal streak, nearly opposite to which, but a little behind it, is a larger and more distinct streak, which is also longitudinal. All of these spots are mixed with, or margined by reddish yellow scales; cilia white, dusted with dark brown. Al. ex. ⅞ inch. Kentucky."

The above is the description of this species as given by the author and which agrees fairly well with the type, in good condition, in Cambridge. The "irregular costal streak," hehind the middle and "which extends to the middle of the apical portion of the wing and widens into a large irregular spot" is scarcely correct, the latter is rather another broad, longitudinal streak between which and the costal spot the dusting is somewhat condensed. There is a row of dark spots along the base of the cilia. The forewings narrow; vein 2 and 3 close together from posterior angle of cell, 7 and 8 short stemmed. Hindwings under 1, lanceolate, gray; cilia concolorous. Underside of body and legs ochreous, slightly dusted with fuscous. In a specimen in my collection, which is smaller—14.0 mm.—the pale brown scales form a fine network between the larger spots. It was taken at Charleroi, Penna.

T. marginimaculella Ch.—Dyar's List, p. 572, No. 6510.—"Outer surface of palpi brown; inner surface and face white; vertex pale sulphur-yellow, or, perhaps, rather deep stramineous. Maxillary palpi grayish white. Antennæ silvery gray. Thorax and base of the costal portion of the wing brown, that color also being extended as a streak or series of spots along the fold to the dorsal margin and at the base of the dorsal ciliæ. There are four brown spots on

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the costal margin, the last of which is placed at the beginning of the cilia, and a row of brown spots extends at the base of the cilia, entirely around the apex; there is a dark brown spot on the middle of the disc and another at the end of the disc. Cilia and hindwings silvery pale gray. Abdomen brown, the apex silvery. The first pair of legs is brown on the anterior surface, and the tarsi are annulate with white. Middle and hind legs silvery gray. Al. ex. ½ inch. Kentucky."

The above is Mr. Chambers' description. A specimen is in the National Museum Collection. Mr. Busck informs me that it is a narrow winged species, hindwings under 1. *T. maculimarginella* Ch. does not appear to differ from this species.

T. fuscopulvella Ch.—Pl. II, fig. 1.—Dyar's List, p. 571, No. 6505.—"Snowy white; outer surface of the labial palpi dark brown; antennæ sordid yellowish white; thorax and primaries dusted irregularly with dark brown scales, the dusting sparse in some portions, but in others aggregated into small spots or patches, a small one of which is on the fold not far from the base; two other larger ones about the middle and others in the apical half of the wing; it also assumes the form of more or less distinct costal and dorsal streaks. Al. ex. three-sixteenths inch. Kentucky."

Not known to me in nature, and while, to judge from the description, the present species seems closely allied to *nigroatomella*, they could not, by any stretch of the imagination, be considered identical.

T. nigroatomella n. sp.—Pl. III, fig. 4.—Palpi, head and antennæ sordid yellowish white. Labial palpi rather long and slender, slightly dusted with fuscous externally. Antennæ faintly annulate with pale brown. Forewings moderately elongate, pointed, white, profusely speckled with dark brown scales, aggregated into ill-defined spots and two ill-defined fascias, the first of these is at one-third the wind length, slightly curved outward and equidistant from the base at both margins; the second fascia begins at the middle of the costal margin and extends obliquely to the beginning of the dorsal cilia; a small costal spot near the base and a dorsal spot behind the anal angle, three or four costal spots in apical part of wing, becoming larger outwardly; an ill-defined spot at end of cell; the apical part of wing more densely sprinkled. Cilia whitish, several dark bars in costal portion, corresponding with the marginal spots, dorsal cilia sprinkled with fuscous scales, which form an irregular, post median dividing line. Hindwings under 1, pale gray, cilia concolorous. Underside of body and legs yellowish white, feebly spotted or tinged with fuscous.

Exp. 8.5 mm.; 0.26 inch.

Hab.—New Jersey (Montclair).

A specimen in my collection, kindly given me by Mr. W. D. Kearfott. Very closely related to *fuscopulvella.*

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HOMOSTINEA gen. n.

Type *curviliniella.*

Head very rough. Labial palpi cylindrical, depressed, second joint with apical setæ and roughened beneath with scales, third joint shorter than the second, pointed. Maxillary palpi plicate. Antennæ two-thirds the length of forewings, simple in both sexes, rather thick, inserted very close to the orbital margin. Forewings lanceolate, pointed; 12 veins, 5, 6 and 7 from a common stem, 1^b simple; an accessory cell. Hindwings narrower than the forewings, lanceolate, costal margin retuse in apical three-fifth. Cilia $1\frac{1}{2}$; 7 veins, cell open between 3 and 4, 5 evanescent towards its origin, 6 wanting, vein 8 attains the margin at two-fifths. Hind tibiæ roughened with coarse long hairs.

Distinctly *Tinea*-like in appearance, but wings rather narrow. One species.

H. curviliniella n. sp.—Pl. VI, fig. 8.—Head ochre-yellow. Labial and maxillary palpi grayish fuscous, with more or less dark brown. Antennæ fuscous. Thorax brown, ends of patagia paler. Forewings a sordid yellowish, dusted with fuscous, basal part of extreme costa dark fuscous; the fuscous dusting condensed along the costa, except its last fifth, extreme base and particularly anal angle blackish; a blackish spot in costal half of wing, before the middle, a curved black line, more or less interrupted, in the middle of the apical third, curved towards and somewhat nearer to the dorsal margin, some scattered scales, more pronounced along the dorsal margin; in the apical part of the wing are some scattered whitish scales. Cilia concolorous with two or three irregular darker lines; underside purplish fuscous. Hindwings grayish fuscous with a feeble brassy lustre towards the apex. Cilia grayish fuscous, paler at their base; underside pale fuscous. Legs yellowish gray, tibia dusted with fuscous, anterior dark fuscous; anterior tarsi dark brown, middle and posterior fuscous above; hairs of posterior tibia grayish. Abdomen entirely grayish fuscous.

Hab.—District of Columbia; Missouri (St. Louis); Kansas (Onaga); Louisiana (Vowells Mill).

The insect shows distribution over a considerable territory. It is possible that it may have been described before, but if so, no description of any North American *Tinea* tallies, nor does it correspond with any types in the Clemens' collection or those at Cambridge and in the National Museum.

TINEOLA H. S.

Dyar's List, p. 570, No. 6487.

Head entirely rough haired. Tongue and maxillary palpi rudimentary. Labial palpi porrect, somewhat drooping, second joint rough scaled beneath with spreading apical bristles, terminal shorter

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than the second, coniform, obtusely pointed. Antennæ filiform, shorter than the forewings, almost imperceptibly pubescent in the male. Forewings elongate, 12 veins, all free; 1^b furcate; membrane clouded along costa from vein 9 to 11. Hindwings elongate-ovate, 8 veins, all free; an accessary cell. Cilia nearly 1. Hind tibiæ rough haired.

Represented in our fauna by our most destructive cloth moth.

T. biselliella Hummel.—Head ochreous ferrugineous. Antennæ ochreous fuscous. Thorax and forewings pale, yellow ochreous, without markings; costa slightly infuscate towards the base. Hindwings grayish white with yellowish tinge. Abdomen and legs pale ochreous.

Exp. 9.0–16.0 mm.; 0.36–0.64 inch.

Hab.—United States.

Almost cosmopolitan. I have seen specimens from almost every State of North America.

TENAGA Clem.

Dyar's List, p. 574.

Head entirely rough haired, except a narrow space surrounding the small salient eyes. Tongue and maxillary palpi obsolete. Labial palpi ascending (drooping in the dead insect), cylindrical, second joint ciliated beneath with setæ in its apical half; terminal shorter than the second, pointed. Antennæ slender, simple, as long as the forewings. Forewings ovate-lanceolate, pointed; 11 veins, 10 absent, 5–6 and 7–8 stemmed, 1^b simple; cell narrow, with entire dividing vein; stem of 5–6 and 7–8 nearly obliterated towards their base. No accessory cell. Hindwings lanceolate, costa not retuse; 8 veins, 5–6 stemmed, cell open; anterior median very faint from base to near origin of vein 7, likewise the common stem of 5–6. Cilia over 1. Hind tibiæ rough haired.

Clemens' statement "the median (posterior median) is two branched, the superior one augutated," this statement I cannot verify, this branch (vein 2) is curved, but not angulated. Its nearest ally is *Tineola*. One species.

T. pomiliella Cl.—Dyar's List, p. 574, No. 6539.—Head dull ochreous, slightly mixed with brown. Labial palpi grayish, tinged with fuscous externally. Antennæ grayish fuscous, paler beneath. Thorax ochreous. Forewings yellowish ochreous, markings dark brown; a spot on base of costa, three irregular fascias, first within basal fourth, curved outward and more or less interrupted in the middle, second about middle, also somewhat interrupted; the third at

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two-thirds, between these fascias are spots and scattered scales; two costal spots beyond the third fascia, extreme apex and some smaller spots along base of dorsal cilia. Cilia grayish ochreous. Hindwings pale, grayish fuscous; cilia gray. Abdomen grayish fuscous. Underside of body and legs pale yellowish gray; tarsi tinged with fuscous.

Exp. 10.0 mm.; 0.4 inch.

Hab.—Pennsylvania (Easton; Mt. Airey?) Hazleton.

Two specimens in my collection, received some years ago from Mr. P. Laurent, without locality labels. I took a specimen at light August 5, 1904.

HYBROMA Clem,

Dyar's List, p. 574.

Head entirely rough haired. Labial palpi cylindrical, spreading, second joint thickened and roughened with scales beneath and some terminal setæ; terminal joint shorter than second, compressed, scaly, pointed. Maxillary palpi plicate. Antennæ simple over half of anterior wing length, filiform, approximate upon the vertex, joints close set, with verticillate scales. Forewings ovate lanceolate, equally narrowed from both margins to apex; 12 veins, all free, a secondary cell, anterior median very faint from base to beginning of secondary cell, 1^b simple. Hindwings lanceolate, costa slightly retuse in its apical half, 8 veins, cell entirely open, anterior median proceeds as 7 to costa and from it arises the common stem of veins 5 and 6. Hind tibia rough haired. One species.

H. servulella Clem.—Dyar's List, p. 572, No. 6540.—Pl. V, fig. 3.—Head, thorax and forewings deep sulphur yellow; labial and maxillary palpi pale yellow, more or less speckled with dark brown scales. Antennæ dark brown. Thorax and forewings deep yellow; patagia dark brown in front, costa of forewings dark brown in its basal half, a large irregular costal spot on the apical third, somewhat oblique and reaching the dorsal margin, the latter in its basal half, dark brown; the dark portion of the dorsal margin is emarginate in its costal border, corresponding with the dorsal convexity of the large costal spot; cilia sulphur yellow, spotted with brown where the subapical spot reaches the dorsal cilia. Hindwings dark fuscous brown with a faint purple lustre. Cilia dark fuscous, paler at the apex. Abdomen fuscous above, anal part and underside yellowish. Legs pale yellow, tibiæ fuscous externally, anterior tarsi entirely fuscous, middle and posterior, fuscous above.

Exp. 11.0–11.5 mm.; 0.44–0.46 inch.

Hab.—Pennsylvania (Hazleton, Mauch Chunk); New Jersey.

This is *Tinea aureosuffusella* Ch., which I have examined in the Cambridge Museum collection. It is defective, but is sufficiently

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well preserved to establish indentity without doubt. Easily recognized by its coloration; the apical transverse spot is frequently interrupted in the middle. It seems to vary but little in size, the above measurements included 14–16 specimens in my collection. On trunk of trees August and September, also attracted to light. Mr. A. Busck—Proc. of the United States Nat. Mus., Vol. xxvii, p. 275—erroneously refers this species to *Monopis*.

TRYPTODEMA gen. nov.

Type *sepulchrella*.

Head and face strongly rough haired. Labial palpi cylindrical, rather stout, second joint with apical setæ, terminal nearly as long as the second, acuminate. Maxillary palpi plicate, very small. Eyes globose, salient. Antennæ nearly as long as the forewing, rather thick, simple. Forewings elliptical lanceolate, 12 veins, all free; large secondary cell; 1^b simple. Hindwings not as wide as the forewings, lanceolate, costa not retuse, 8 veins, 5 and 6 stemmed, cell open between stem of 5 and 6. Cilia under 2.

The type of the genus is an obscure looking insect. Its nearest ally is *Hybroma* Clem., from which it differs principally by the much longer antennæ. In appearance no similarity exists. One species.

T. sepulchrella n. sp.—Pl. I, fig. 3.—Labial palpi dark fuscous externally, apex pale, grayish fuscous within. Maxillary palpi grayish fuscous. Head russet, somewhat brown before the insertion of the antennæ, the latter grayish fuscous, indistinctly annulate with pale. Thorax yellowish, spotted with fuscous, patagia more fuscous, especially in front. Abdomen grayish fuscous. Forewings dark brown, interspersed in varying extent with pale yellow scales, especially so along middle of wing, a large dark brown spot near the base and connected with the costa, a conspicuous spot in middle of disc and one at end of cell, between these two spots the yellowish scales form a pale streak, a spot in middle of fold, from which again extends a pale streak, more or less distinct, to dorsal margin at beginning of cilia; the latter ochreous fuscous, speckled with brown scales which form an indistinct dividing line about the middle of their length; underside fuscous, slightly bronzed. Hindwings grayish fuscous; cilia concolorous.

Exp. 8.0 mm.; 0.32 inch.

Hab.—Maryland (Plummer's Island).

Taken by Mr. Busck in month of August, who kindly has placed a specimen in my cabinet.

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EUDARCIA Clem.

Dyar's List, p. 574.

Head, and especially the face, rough haired. Eyes small, hemispherical, freely visible from above, a free space immediately above. Labial palpi rather short with a few isolated setæ, third joint nearly as long as the second, pointed. Maxillary palpi plicate. Antennæ of moderate thickness, fully as long as the forewings, somewhat flattened, simple, joints close set with prominent angles, giving a finely denticulate appearance. Forewings lanceolate; 11 veins, 4 wanting, veins 7 and 8 and 9 and 10 stemmed, 11 short; 1^b furcate. Hindwings lanceolate, 7 veins, cell open between 3 and 5, 4 wanting, 5 and 6 stemmed. Cilia a little over 1. Hind tibiæ rough haired.

The two species here recognized are rather small insects, brownish black, forewing with white fascias and marginal spots, and are distinguished as follows:

Apical cilia of forewing white.....**simulatricella.**
Apical cilia not white.....**cæmitariella.**

E. simulatricella Clem.—Dyar's List, p. 574, No. 6538.—Head brownish ochreous. Palpi pale yellowish. Antennæ ochreous, annulated with dark brown. Forewings a rich dark chocolate brown with a faint purple lustre. A white fascia at one-third, a white costal spot about the middle, a similar dorsal spot opposite and a trifle beyond the middle, a curved costal spot before the apex. Cilia brown, white about the apex and correspondingly to the dorsal spot. Hindwings brownish fuscous; cilia concolorous. Underside of wings brown with considerable lustre. Legs yellowish fuscous.

Exp. 8.0–9.0 mm.; 0.32–0.36 inch.

Hab.—Atlantic States.

A specimen in my collection was received from Webster, New Hampshire.

E. cæmitariella Cham.—Dyar's List, p. 574, No. 6538, syn.—Certainly distinct from the preceding species, with which indeed it agrees in general appearance, but from which it is readily distinguished by the following characters: All wing markings narrower, more oblique, especially noticeable in the first and second costal spots and the first dorsal spot, which is farther removed from the base; the costal spot before the apex is small and inconspicuous, simply oblique, in the three or four type specimens in the Cambridge Museum, the apical cilia are brown. The markings vary from mere marginal spots to entire fascias.

Exp. 8.0 mm.; 0.32 inch.

Hab.—Kentucky; Gulf States.

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PROGONA gen nov.

Type *Skinnerella.*

Head entirely rough haired. Labial palpi cylindrical, drooping (in the dead insect) and spreading, of moderate length; second joint clothed with spreading, hairlike scales, in its apical half, leaving only the upper edge free and giving it a bushy appearance, third joint nearly as long as the second, roughened beneath towards the apex, latter obtusely jointed. Maxillary palpi plicate. Antennæ of moderate thickness, first joint short, thickened, joints closeset, with verticils of scales, simple, and about two-thirds (♂) or nearly as long (♀) as the forewing. Eyes rather large, not prominent and almost entirely concealed from above. Body somewhat robust. Forewings elongate elliptic, pointed; 11 veins, 3 absent, 4–5 and 6–7 stemmed, 10 remote from anterior angle of cell, 1^b shortly furcate. Hindwings syntar-shaped, costa emarginate from two-fifths the wing length; 8 veins; 4 and 5 from a common stem, which arises from the apex of the cell, which is closed, 7 evanescent towards its origin, 8 short, scarcely two-fifths the wing length, cilia under 2. Hind tibiæ rough haired.

A very distinct genus, not closely related to any other known to me. In appearance the species resemble *Opostega.* The three species here recognized are closely related; of small size, white color with brown costal spots, and are distinguished as follows:

Face black.
Thorax entirely white.....**skinnerella.**
Thorax with a brown spot each side anteriorly.....**bipunctella.**
Head entirely white.....**floridella.**

P. skinnerella n. sp.—Palpi and face blackish brown, limited above by a line drawn across from lower margin of first antennal joint, above this the head is pure white. Antennæ fuscous brown, becoming white towards the base, apex a trifle paler. Thorax pure white. Abdomen pale grayish fuscous, with some scattered white hairs, anal brush yellowish white. Forewings white, costa dark chocolate brown for four-fifths its length with three wave-like dilatations, the first at the base, second before the middle, and the third beyond the middle; remainder of surface with scattered brown scales, an aggregation of these form an irregular spot at the beginning of dorsal cilia and another just below the apex, the latter spot seems to consist of two or three short striæ; apical part of wing thinly overlaid with yellowish red, having a faint golden reflection in certain lights. Cilia yellowish red, with dark brown scattered scales and one or two irregular dividing lines. Hindwings grayish fuscous; cilia yellowish fuscous. Underside of forewings dark fuscous; hindwings paler. Underside of thorax brown; abdomen yellowish gray, sprinkled with fuscous. Anterior and

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middle legs brown, tarsal joints paler at apex; hindlegs yellowish, tinged with gray and fuscous.

Exp. 7.5 mm.; 0.3 inch.

Hab.—New Jersey (Caldwell).

Taken by Mr. D. W. Kearfott in July, and to whom I am indebted for a male specimen. Named in honor of my friend Dr. Skinner.

P. bipunctella n. sp.—Pl. VI, fig. 1.—Labial palpi brown, apices of second and third joints paler, maxillary palpi yellowish. Face and anteror part of head a rich brown, remainder of head white, with a faint tinge of yellowish. Antennæ nearly as long as the forewing, brown, basal joint deep brown, apex a trifle paler. Thorax white, a large oval, velvety, dark brown spot each side before the insertion of the forewing, the latter white, costa brown from base to apex, though paler towards the latter, the brown dilated in the basal third to one-third the wing breadth, a similar expansion in the last third, an irregular spot on the dorsal margin about the middle; scattered brown scales along the entire dorsal margin, more evident along base of cilia, latter pale brown, densely sprinkled with brown scales in costal portion, white around the apex; remainder of surface very sparingly sprinkled with pale brown scales, giving it a somewhat sordid appearance; in the apical part of the wing are several ill-defined patches of pale golden yellow; the dark brown has in certain lights a golden reflection; underside brownish. Hindwings grayish fuscous. Abdomen above grayish fuscous. Underside of body silvery white, tinged with fuscous. Legs silvery gray, anterior and middle dusted with fuscous; tarsi brown above, joints slightly paler at apex; hind legs entirely yellowish gray.

Exp. 9.0 mm.; 0.36 inch.

Hab.—Florida (Hastings).

A single female specimen in my collection.

P. floridella n. sp.—Head and thorax entirely white, former slightly tinged with yellow posteriorly and between the antennæ. Palpi yellowish. Antennæ scarcely two-thirds the wing length, brown, basal part and extreme apex whitish. Forewings white, costa seal brown for three-fourths, not dilated near the base, a conspicuous blackish brown costal spot about two-thirds the wing length; a blackish spot or short dash on the disc, just before the middle and nearer the costal than dorsal margin, a short dash just before the apex nearer the dorsal margin; apical two-fifths near the costa, and apical part of wing, thickly dusted with golden yellow. Cilia ochreous yellow, whitish at beginning of dorsal portion, with scattered brown scales, forming two ill-defined lines. Hindwings grayish fuscous. Abdomen pale fuscous above. Underside of body grayish silvery. Legs yellowish white; anterior tibiæ and tarsi dark brown, middle and posterior tinged with brown.

Exp. 8.0 mm.; 0.32 inch.

Hab.—Florida (Hastings).

A male specimen in my collection.

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HOMOSETIA Clem. (*Pithys*, Ch.)

Type *tricingulatella* Clem.

Head entirely rough haired, sometimes in lateral tufts on the vertex. Labial palpi cylindrical, spreading, semi-porrect; second joint slightly incrassate towards the apex, with spreading apical and generally lateral setæ, terminal joint shorter than the second, pointed. Maxillary palpi plicate. Antennæ three fourths the length of the forewings, rarely (subgenus *Diachorisia*), only one-half, with closely set joints, not or very finely pubescent in the male, more rarely with verticillate scales, and distinctly pubescent in the male (*Diachorisia*). Eyes round, visible from above.

Forewings elongate-lanceolate, with or without scale tufts. All veins present, free, or 7–8 stemmed (*Diachorisia*); vein 2 sometimes obsolete towards its origin; vein 1^b simple. Hindwings scarcely over one half, lanceolate or lineo-lanceolate, costa retuse in its outer two or three fifths, cilia over 2, 8 veins, free, or rarely (subgenus *Stenoptinea*), veins 5 and 6 stemmed. Posterior median moderately distant (*Calostinea*, *Diachorisia*), or else very close to the wing margin, and vein 2 merely rudimentary (*Homosetia*, *Stenoptinea*). Cell closed. Internal veins absent except in *Calostinea* and *Diachorisia*. Hind tibia rough haired.

Narrow-winged species, differing essentially from *Tinea* L. only in vein 1^b of forewings being simple at base. As here defined the genus includes the genus *Semele* Ch. and *Diachorisia* Clem. *Semele cristastella*, the type of the genus is a true *Homosetia*, whereas the other two species *argentinotella* and *argentistrigella*, placed by Chambers in this genus, differ somewhat structurally. *Diachorisia*, the type of which I have critically examined, is not sufficiently distinct to warrant its retention as a distinct genus. Dr. Clemens' description as well as delineation of the hindwing, is erroneous; the costal margin is distinctly emarginate in its outer half, veins 5 and 6 are apparently free, and vein 8 attains the margin just beyond the middle. There is nothing in the type, suggestive of any close relationship to *Incorvaria* or *Eudarcia*, as pointed out by the author.

On account of structural differences, I shall arrange the species under four subgenera, as follows:

Forewings with an accessory cell; no scale tufts. Hindwings with posterior median vein not close to wing margin, internal vein present.

Antennæ of ♂ distinctly pubescent; forewings without metallic markings; veins 7 8 stemmed; costa of hindwings distinctly emarginate.

Diachorisia.

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Antennæ of male simple; forewings with metallic markings, costa of hindwings very feebly emarginate.....**Calostinea**
Forewings without accessory cell. Hindwings with posterior median vein, very close to wing margin, vein 2 rudimentary, internal veins absent.
Veins of hindwing free.....**Homosetia.**
Veins 5 and 6 of hindwing stemmed.....**Stenoptinea.**

Aside from the species, which properly belongs here, I append four species, the generic position of which I am in doubt of. Two of these are known to me, without, however, being enabled to study their venation, these are *Tinea septem-strigella* Ch. and a new species —*heteropalpella;* the others not known to me, are two species described by Walcker, *martinella* and *afflictella*, and placed by him in *Tinea*, but the long cilia of the hindwings induced me to place them rather in the genus under consideration than in the former.

These four species will be tabulated as of doubtful generic position.

Subgenus **DIACHORISIA** Clem.

Very little is to be added to what has been stated before. The antennæ are shorter, about half as long as the forewings, roughened and pubescent in the male. The insect is small, sordid white, with dark brown markings. One specimen.

H. velatella Clem.—Dyar's List, p. 573, No. 6537.—Head ochreous gray, mixed with brown. Labial palpi whitish within, fuscous externally. Antennæ grayish ochreous, basal joint whitish. Thorax whitish, speckled with fuscous scales, patagia fuscous anteriorly. Forewings lanceolate, sordid white, dusted with pale fuscous scales and spotted with darker fuscous, about four or five distinct and some smaller, costal spots, a spot in middle of disc, another at end of cell, and one on the fold beneath the first discal spot. The third distinct costal spot is just beyond the middle. In the apical part of wing the dark scales are aggregated into some indistinct spots. Cilia with indistinct dividing line at three-fourths there length, and some scattered scales. Legs ochreous white, dusted with fuscous.

Exp. 9.0 mm.; 0.36 inch.

Hab.—Pennsylvania.

The type, in fair condition, is in the Academy of Natural Sciences, Philadelphia, Another specimen in my collection.

Subgenus **CALOSTINEA.**

Wings relatively wider; costa of hindwings feebly emarginate beyond the middle. The species are of a dark, rich brown appearance. Forewings marked with silvery white streaks and spots, which consist of raised, but not tufted scales.

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As stated before, the two species described by Chambers, were placed by him in *Semele*.

They are distinguished as follows:

With transverse white fascia ..... **argentistrigella.**
Without such a fascia ..... **argentinotella.**

H. argentistrigella Ch.—Dyar's List, p. 574, No. 6546.

I here give Chamber's description:

"Face and palpi silvery white, outer surface of the labial palpi brown; antennæ silvery beneath, maroon brown above, annulate with silvery white; vertex maroon brown, thorax above, a spot under each wing and the basal portion of the primaries rich maroon brown, or in some lights violaceous, with a narrow irregular white facia upon the wings behind the maroon basal portion; behind the fascia the primaries are maroon brown or violaceous mixed with white towards the facia, the white gradually disappearing towards the apex. Six oblique silvery costal streaks, the first being small and the others becoming gradually larger to the fifth, the sixth again being smaller; two distinct dorsol apical white streaks and a small patch of maroon, dusted with white in the dorso-apical part of the wing, which is continuous with those of the five dorsal silvery streaks; dorsal cilia silvery; abdomen violaceous, each segment silver fringed; legs silvery iridescent. Alar ex. ½ inch. Kentucky.

Not known to me in nature.

H. argentinotella Ch.—Dyar's List, p. 574, No. 6547.—Palpi and face creamy yellowish, second joint of labial palpi blackish externally. Vertex, thorax and basal portion of forewings a rich velvety brown, patagia mixed with whitish. Antennæ over ¾, brown, finely annulate with pale, the basal portion of the forewings is angulated externally on the fold, it reaches to about one-fifth on the costa and one-fourth on the dorsal margin, and extends more or less interruptedly on the fold, and also along the costal margin, immediately beyond the basal patch, the wing is strongly suffused with silvery white to about the middle, when it becomes overlaid with bronzed brown, more especially in the dorsal half of wing; the dark brown of the costal margin becomes gradually wider towards the apex, and completely covers the apical part of the wing; on the costa are eight silvery white oblique spots, the first of these is immediately beyond the basal space, and is almost confined to the extreme costa, the following spots become less and less oblique, all pointing backward, except the last, just before the apex, which is perpendicular to the margin, and points forwards, opposite to the last is a similar dorsal spot, and preceding it, five or six oblique, but less distinct dorsal spots; two distinct silvery spots at end of cell; all these spots are raised above the surface, but differ entirely from the scale-tufts of *Homosetia* proper. Along the anterior part of the dorsal cilia, the wing is more distinctly silvery white; costal cilia dark brown, dorsal portion whitish, with a median dividing line, and another towards the free margin, basal portion more brown, the marginal spots extend into the cilia. Hindwings pale brassy brown; cilia fuscous. Abdomen brown, tinged with silvery; anal

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tuft creamy white. Underside of body silvery white, tinged with brown; legs creamy white, tibiæ and tarsal joints spotted with dark brown.

Exp. 12.0-17.0 mm.; 0.48-0.68 inch.

Hab.—Kentucky; Florida (Hastings).

A specimen in my collection from the last named locality is much smaller than the expansion given by Mr. Chambers, but which, without a doubt, is this species. The author mentions only seven costal spots, but no doubt overlooked the one immediately following the dark basal space. I am strongly inclined to the opinion that the present species is only a variety of *H. argentistrigella.*

Subgenus **HOMOSETIA.**

Contains the bulk of the species. The wings vary in width from nearly lineo-lanceolate to lanceolate of the forewings. Hindwings from lineo-lanceolate to lanceolate, costa distinctly retuse in its outer half or three-fifths. Forewings with scale tufts.

The species may be distinguished as follows:

Forewings dark brown or blackish brown.
  Face white, vertex black.
    A large, well defined silvery spot near the base.....**cristatella.**
    Without such a spot.....**obscurella.**
  Head orange.....**chrysoadspersella.**
Forewings tawny, or yellowish brown.
  With white costal spots.
    Wings narrower; spots not oblique.....**costisiguella.**
    Wings wider; costal spots oblique.....**fasciella.**
  Without white costal spots.....**maculatella.**
Forewings grayish white.
  Forewings wider, less elongate; subcostal tuft of median fascia large.
miscecristatella.
  Forewings narrow, subcostal tuft of median fascia small.
tricingulatella.

H. cristatella Ch.—Dyar's List, p. 574, No. 6548.

Mr. Chambers describes this species as follows:

Maxillary palpi yellowish white; labial palpi with the second joint dark brown with a white line along its upper surface; third joint white. Face white, vertex black, antennæ brown, and the upper surface of the thorax deep velvety black. Forewings shining velvety black with a large spot like burnished silver at the base, and not quite touching the costa, margined behind by a transverse row of raised scales; about the basal fourth is a shining silvery fascia which is slightly curved, a little irregular in outline, widest about the middle, but wider on the costal than on the dorsal margin, and margined behind by a transverse row of scales. About the middle of the wing is another fascia of the same hue, which is a little oblique, being nearer the base on the costal than on the dorsal margin,

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and appearing under the lens to be slightly interrupted about the middle; it also is irregular in outline, and margined behind with a transverse tuft near the costa, and has some scattered silvery scales, margining it behind from the middle to the dorsal margin, and extending back along the margin. Just before the costal fringe is a large silvery spot which extends nearly to the dorsal margin, and almost unites with the silvery scales by which that margin is marked behind the second fascia. In the second fascia, on the extreme costa, are two minute white spots, and on the extreme costa in the large silvery spot before the cilia are two others, and behind them yet two others more distinct; these last four spots are nearly equidistant, and opposite to them are three others at the base of the dorsal cilia. Cilia showy white. Hindwings and upper surface of the abdomen silvery tinged with golden. Under surface of the primaries brown, tinged with purple, that of the hindwings a little paler. First and second pair of legs mainly white. Venter with the basal half of each segment brown, apical half yellowish white. Al. ex. a little over ½ inch. Kentucky in June. The tufts on the wings are very easily rubbed off.

This is the type of Chambers' genus *Semele*, which, however, as stated before, is not distinct from *Homosetia* Clem. The type in good condition is in Cambridge. A beautiful and strongly marked form; the second silvery fascia is rather behind than "about" the middle; the third tuft is quite large and at the end of the cell; there is also a small tuft at three-fifths of the fold. I have seen no other specimen like it.

H. obscurella n. sp.—Maxillary and labial palpi sordid, yellowish white, second joint of the labial palpi externally and beneath fuscous brown. Face whitish, vertex brown. Antennæ sordid, grayish ochreous, finely annulate with fuscous above, basal joint dark brown. Thorax dark purplish brown. Forewings dark, golden brown, irrorated with silvery blue and sparsely sprinkled with some darker and paler scales; an oblique scale tuft at one-fourth, immediately below the fold, a large discal tuft at one-third, nearer the costa, a transverse tuft at end of cell, all the tufts are dark seal brown, scarcely paler within; along the base of the costal cilia near the apex are three or four small oblique silvery white spots, preceded by some minute, pale dots on the costa, the last of the costal spots forms with the last dorsal spot a curved line enclosing the apex; an indistinct pale silvery space between the first and second scale tufts there is also a bluish silvery oblique line from the costa between the second and third scale tufts and another similar spot a little beyond, these latter spots contain no white scales. Costal cilia brown, with three or four pale lines, apical and dorsal cilia yellowish sprinkled with fuscous scales in basal half. Hindwings pale fuscous, with strongly brassy lustre, cilia concolorous. Underside of wings fuscous with purple reflection. Abdomen fuscous; underside of body and legs grayish white, dusted with fuscous; tarsi banded with fuscous.

Exp. 11.0 mm.; 0.44 inch.

Hab.—Kansas (Onaga).

A male speciman in my collection, quite distinct from *cristatella* as well as *chrysoadspersella*, though nearer the latter.

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H. chrysoadspersella n. sp.—Pl. II, fig. 8.—Maxillary and labial palpi silvery white, the latter externally, and the third joint within at the base, brownish. Face orange yellow becoming orange brown on the vertex. Antennæ ♀, brown above, silvery white beneath. Thorax deep brown. Forewings dark brown, irrorated with silvery gray, which in certain lights has a blueish reflection, and sprinkled with fine golden scales; costal, and to some extent, the dorsal margin, darker; in the basal fourth are three rounded, ill-defined silvery spots, between these and on the fold is a scale tuft, beyond these is an oblique, ill-defined, silvery band limited externally at two-fifths the wing-length, by two discal scale tufts, the lower of which is on the fold, exterior to these tufts is an oblique, ill-defined, darker fascia, externally to this another oblique silvery facia, interrupted below the middle; two tufts at end of cell and another at almost the end of fold, all the tufts are very dark, velvety brown, faced towards the base with silvery white scales; six silvery white costal spots, the first before the middle, the first and second of these are somewhat oblique, the third perpendicular to the margin, the remaining three directed obliquely backward, the fourth spot forms with an opposite spot on the dorsal margin, an angulated, silvery line or band; on the dorsal margin are five or six similar spots; a narrow subcostal line of golden yellow in basal third. Cilia gray, basal portion dark brown, barred with silvery lines corresponding with the marginal spots. Hindwings grayish fuscous without metallic lustre, cilia concolorous. Abdomen above fuscous brown; body beneath and legs silvery white, the latter tinged with brown, tarsal joints brown above, except at their apex.

Exp. 8.5 mm.; 0.34 inch.

Hab.—Maryland (Plummer's Island).

A single specimen sent me by Mr. A. Busck, who took it at the above locality in September, 1903. Type in the National Museum.

H. costisignella Clem.—Dyar's List, p. 574, No. 6498.—Pl. V, fig. 2.—Maxillary and labial palpi dark fuscous, the latter paler within and whitish at the apex. Head sordid ochreous, intermixed with brown. Antennæ dark fuscous above, paler beneath. Thorax and forewings reddish fulvous, the latter narrow; costal margin and dorsal margin from about the middle to apex, blackish brown; on the costal margin are about eight spots, which are somewhat arranged in pairs, the second pair about the middle in such a way that the third spot is before and the fourth behind the middle, the remaining four spots are within the last third, and the last of these extends across the apex to a small dorsal spot; the apical part is thickly dusted with dark brown, this space is rather sharply limited by an oblique line which extends from beginning of dorsal cilia to the fifth or sixth costal spot, and interspersed with silvery white scales; the remainder of the wing is traversed by obscure, oblique silvery lines, which proceed from the first four costal spots, the two exterior of these lines become confluent and form an indistinct fascia, these lines become less distinct as they approach the dorsal margin, and in a certain light have a blueish pearly appearance; a blackish brown scale tuft at end of cell. Cilia gray with a rather wide, more or less interrupted dividing line at basal third. Hindwings gray, with brassy lustre, darker towards the apex; cilia concolorous. Abdomen above and beneath fuscous brown mixed with gray. Legs pale yellowish gray, anterior and middle pair dark brown externally; tarsal joints pale at apex; hind legs paler.

Exp. 10.0 mm.; 0.4 inch.

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Hab.—Pennsylvania (Hazleton; Mauch Chunk); New Jersey (Essex Co.); New York (Ithica).

The type of this species in good condition (one pair of wings only) is in the Academy of Natural Sciences, Philadelphia. The difference of this from the following species will be referred to under the latter, to which I may here add another point, namely the solitary scale tuft at end of cell in *costisignella*.

H. fasciella Ch.—Dyar's List, p. 574. No. 6541.—Face and palpi creamy yellow, second joint of labial palpi brownish externally, vertex tawny brown. Antennæ silvery gray beneath, dark brown above. Thorax dark golden brown. Forewings tawney golden brown intermixed with silvery white, both margins, and a longitudinal streak through the disc, which is a little nearer to the costa than to the dorsal margin, dark brown; seven white costal streaks, the first at one-fourth, the second just before the middle, the first four of these are oblique and rather distant, the other three more closely together, are nearly perpendicular to the margin; apical half of dorsal margin with a number of short transverse strigæ; a pair of dark seal brown scale tufts at two-fifths, the upper one smaller in middle of disc, the lower one quite large beneath the fold; another pair of tufts at end of cell, some of these tufts are faced externally with silvery white; a golden yellow subcostal streak from near the base to nearly three-fourths the winglength, more or less distinct. Cilia pale gray, with an interrupted subbasal dividing line. Hindwings grayish fuscous with brassy lustre. Underside of body yellowish gray, legs grayish white, more or less fuscous externally; tarsi fuscous, joints pale at apex.

Exp. 12.0–13.0 mm.; 0.48–0.52 inch.

Hab.—Kentucky; Pennsylvania (Hazleton); New Jersey (Montclair), New Hampshire (Hampton).

Very similar to, but quite distinct from, *H. costisignella* Cl., from which it differs by its larger size, relatively wider wings and the differently arranged costal spots.

H. maculatella n. sp.—Maxillary and inside of labial palpi sordid yellowish white, dusted with fuscous, the latter externally, except apex of third joint, dark brown, the second joint with isolated black setæ beneath and at apex. Head a bright ochre yellow. Antennæ ♂, fuscous brown above silvery gray beneath. Thorax sordid yellowish white, finely speckled with darker scales; patagia dark brown anteriorly. Forewings lanceolate, a pale ashen gray, tinged with yellow, dusted and spotted with dark blackish brown, as follows: basal fifth of costa, a spot at one-fourth; a conspicuous costal spot about the middle, and which extends as an oblique, irregular fascia to the inner margin; another similar though smaller fascia at two-fifths, more or less interrupted, and also reaching the dorsal margin, beyond this are three to four costal spots, gradually increasing in size; base of dorsal cilia dotted with brown; cilia yellowish with dark brown bars and lines, correspondingly to marginal spots. Hindwings grayish fuscous with brassy lustre; cilia yellowish gray. Underside of wings grayish fuscous. Abdomen above grayish fuscous; underside of body and legs sordid

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yellowish tinged with fuscous, anterior and middle tibiæ and tarsi more conspicuously dark brown, joints of latter pale at apex.

Exp. 10.0-12.0 mm.

Hab.—Pennsylvania (Hazleton); California (Placer County).

A peculiar species, differing in appearance from our other species. The costa of forewing more arched from base; the costal cilia give the appearance as though the costal margin was emarginate beyond the middle. This species has veins 7 and 8 of forewing stalked, but does not differ otherwise in neuration; its distribution is certainly remarkable; my specimens were taken at light. Scale tufts of forewing very feeble.

H. misceeristatella Ch.—Dyar's List, p. 574, No. 6544, 6542, 6543.—Palpi and face creamy white, labial palpi externally, except apical half of terminal joint, fuscous; vertex white and fuscous intermixed, varying from nearly white to dark fuscous; antennæ fuscous, paler beneath. Thorax fuscous brown, speckled with gray. Forewings sordid white, dusted more or less thickly with fuscous scales and intermixed with golden yellow scales, aggregated into lines and patches; markings dark fuscous brown, and arranged as follows: Extreme base of costa, and to a less extent the base; an oblique costal spot very near the base, and containing a patch of yellow scales within the costal margin; an oblique fascia, more or less complete before the middle, containing likewise a similar patch of yellow scales, a transverse fascia, more or less complete at two-thirds, a well marked costal and dorsal spot between the second and third fascia, beyond the last fascia are four oblique white costal spots, and about three on the dorsal margin; a small scale tuft just before the first oblique costal spot below the fold, two tufts along the inner margin of the second oblique fascia, the larger one transverse on the disc the smaller further outwards below the fold, a very small tuft below outer end of fold; a large transverse tuft at end of cell, these tufts consist of dark brown scales, faced externally with golden yellow. The fuscous dusting conceals the ground color more or less completely in the apical part of the wing; the golden yellow scales at times form a subcostal streak from near the base. Cilia grayish with a well-defined dividing line at one-third, and an ill-defined one at two-thirds, and with pale lines from the marginal spots. Hindwings grayish fuscous, with brassy lustre, cilia gray. Abdomen above grayish fuscous; body beneath and legs yellowish silvery white; anterior and middle tibiæ and tarsi dark fuscous brown, tarsal joints paler at apex.

Exp. 9.0-11.0 mm.; 0.36-0.44 inch.

Hab.—Atlantic States.

I have seen the type in Cambridge of this species as well as of *Pithys aurocristatella* and *fuscocristatella*, and fully agree with my friend Mr. Busck, who, somewhat cynically, states that they are specimens of the same species in various states of rubbedness; *auricristatella* has the head entirely whitish and the wings more conspicuously white than usual; *fuscocristatella* is badly worn and

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without doubt is identical with *miscecristatella*. For differentiation from *tricingulatella* I refer to that species.

H. tricingulatella Clem.—Dyar's List, p. 572, No. 6524.—Palpi whitish, dusted with fuscous externally and with a dark fuscous spot on second and third joint above. Head sordid white, intermixed with fuscous above. Antennæ fuscous. Thorax gray, patagia dark fuscous anteriorly. Forewings narrow, margins, especially the costal, nearly straight, subparallel; grayish white dusted and speckled with fuscous; extreme base, a fascia at one-fifth; a second one, more oblique, before the middle, a third fascia at two-thirds, curved, sinuate within; these three fascia reach the inner margin more or less distinctly, beyond the third fascia are three costal and three corresponding dorsal spots, forming more or less distinct, transverse bands; both margins are more or less dotted between the fascias; a dark spot at the apex, a pair of dark brown scale tufts along the inner margin of first and second fascia, the lower tuft being the larger; a tuft on the anterior margin of third fascia, all these tufts are faced with silvery white scales within. Cilia grayish, with a broad, perapical, dividing line near the base, barred with short white lines which proceed from the white lines between the apical marginal spots. Hindwings pale grayish fuscous, with feeble brassy lustre. Abdomen dark fuscous brown above, underside fuscous mixed with white. Anterior and middle legs whitish, spotted with dark fuscous, posterior legs grayish fuscous.

Exp. 10.0 mm.; 0.4 inch.

Hab.—Pennsylvania, New Jersey (Essex County).

My friend, Mr. A. Busck, considers this species identical with the preceeding. A view I cannot share. I have again made careful comparisons of the type, which is in good condition in the Academy of Natural Sciences, Philadelphia, with well authenticated specimens of *H. miscecristatella* and can reach but one conclusion, that they are distinct, though closely related. The wings in *tricingulatella* are distinctly narrower, margins almost parallel, the upper tuft of median fascia scarsely as large as the lower and immediately above it, while the lower one is further outwardly in *miscecristatella*. A specimen in my collection, received from Mr. W. D. Kearfott, is identical with the type.

Subgenus **STENOPTINEA.**

Characters, those of *Homosetia* proper, except that veins 5 and 6 of hindwings are stemmed. The hairs of the vertex project forward in form of a tuft which is met by the ascending hairs of the face.

The two species here recognized are the smallest Tineids with plicate maxillary palpi known to me, and may be distinguished as follows:

Apical part of forewing and cilia not pale ....**ornatella.**
Apical part of forewings and cilia buff brown .....**auriferella.**

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H. ornatella n. sp.—Pl. IV, fig. 3.—Labial and maxillary palpi and face, pale yellowish white; third joint of labial palpi almost as long as the second. Vertex and thorax a deep rich brown. Antennæ grayish fuscous, shining. Forewings a rich, dark brown, overlaid in irregular patches of golden and silvery scales; margins darker; on the costa are seven short, silvery white lines, the first three of these are directed obliquely backward, the third is about the middle and the least distinct, the four remaining are nearly perpendicular to the margin, slightly directed forward; just before the middle is a pair of dark seal brown scale tufts, the upper one just above the middle of the wing, the lower one within dorsal margin, a pair of smaller tufts at end of cell; some small silvery spots along the dorsal margin. Cilia grayish fuscous. Underside dark fuscous with a coppery lustre. Hindwings grayish with feeble brassy lustre; cilia concolorous. Abdomen above dark velvety black, anal tuft pale; underside grayish fuscous. Legs pale gray, tinged with fuscous externally; tarsal joints pale at apex.

Exp. 6.5 mm.; 0.26 inch.

Hab.—District of Columbia (July).

A male specimen received from Mr. A. Busck. The smallest Tineid with plicate maxillary palpi known to me.

H. auriferella n. sp.—Maxillary palpi pale yellowish, dusted with fuscous; second joint of labial palpi dark fuscous, whitish above, with rather long apical bristles, terminal joint fuscous in basal half, remainder whitish. Face creamy white. Tuft of head divided in the middle, a rich maroon brown. Antennæ grayish fuscous. Thorax dark brown with a feeble purple lustre. Abdomen dark brown, paler towards its base, anal tuft pale. Forewings a rich dark brown; a large discal scale tuft before the middle, two similar tufts at end of cell; on the costa are six to seven indistinct silvery white striæ, the first and second, directed obliquely backward, the third a mere dot, is beyond the middle, the remaining striæ are directed obliquely forward; within the basal fourth and nearer the costa is a dash of golden yellow scales, another dash of similar scales extends from the first scale tuft to the lower tuft at end of cell and becoming more distinct outwardly; towards the apex the wing becomes a yellowish buff color, with a sprinkling of golden scales; some scattered silvery scales in outer half of wing. Cilia brownish, becoming pale yellow outwardly. Hindwings pale fuscous, with brassy tinge; cilia concolorous. Underside of abdomen and legs pale yellowish gray; tibiæ and tarsi fuscous externally; tarsal joints pale at apex.

Exp. 8.0 mm.; 0.32 inch.

Hab.—District of Columbia.

A male specimen received from Mr. A. Busck.

Species of Doubtful Generic Position.

H. ? septemstrigella Ch.—Pl. I, fig. 5.—Dyar's List, p. 572, No. 6522.—"Vertex white; basal joint of antennæ white on the upper, brown on the lower surface, stalk of antennæ black, with a white line along each side. Thorax and basal half of forewings blackish brown, the apical half having its costal half blackish brown and its dorsal half white, the costal brown of the apical half being separated from the basal brown half by a white costal streak, which extends

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into the dorso-apical white part; beyond this costal white streak are five others, which likewise extend across the costo apical brown to the dorso-apical white part of the wing, thus dividing it into a number of large spots; the first of these five streaks is oblique, the others perpendicular to the costal margin, and the space or brown spot between the second and third is larger than that between the others. Dorsal cilia brown with numerous narrow white streaks running up through them from the dorsal white margin. In the basal half of the wing there is a narrow white line extending along the fold, and an oblique white costal streak which almost reaches the fold. Face and palpi grayish fuscous. Under surface of body and the legs yellowish. Alar expansion a little over one-fourth of an inch. Bosque County, Texas.

The above is Mr. Chambers' description which agrees with the well-preserved type in Cambridge. The forewings are somewhat falcate, or perhaps better the outer half of the dorsal margin appears somewhat emarginate; the space between the second and third oblique streak spoken off in the text appears to me rather smaller than the preceeding interspace. Hindwings narrowly lanceolate; cilia 3. Forewings without scale tufts. Second joint of labial palpi with a few setæ, third joint short, obtusely pointed.

H.? heteropalpella n. sp.--Pl. III, fig. 3.--Palpi sordid white; third joint of labial palpi, except the apex, fuscous. Head sordid white, intermixed with brown on the vertex. Antennæ yellowish white, annulate above with brown. Thorax whitish, patagia brown in front. Forewings sordid white, sprinkled with golden brown scales, somewhat arranged in irregular transverse lines; a velvety, dark brown spot on extreme base of costa, from which extends a line obliquely to fold and thence perpendicularly to the dorsal margin; an oblique costal spot at one-third, an irregular transverse band at two-thirds, between the two latter, is a smaller costal spot and a similar spot between the band and apex; a rather large spot in middle of dorsal margin and a small dorsal spot opposite the last costal one; a round spot at the extreme apex. Cilia whitish sprinkled with dark brown scales; all the dark brown spots consist of semi-erect scales. Hindwings silver gray; cilia pale gray, faintly yellowish at base. Abdomen grayish fuscous. Legs ochreous white; anterior and middle tibiæ and tarsi tinted with fuscous.

Exp. 8.0 mm.; 0.32 inch.

Hab.—Maryland (Plummer's Island).

A single female specimen was received from Mr. A. Busck and is now in the National Museum collection.

A very peculiar species, which no doubt, on careful study of its venation in connection with the following structural characters, will prove generically distinct. Maxillary palpi unusually developed, six jointed, folded; first joint about as long as the following five joints together, the latter scaly and overlapping the labial palpi; latter cylindrical moderately thick, second joint with apical setæ, third joint

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pointed. Head entirely clothed with long, rough, hair. Eyes small, round, somewhat approximated and freely visible above; vertex narrow. Antennæ nearly three-fourths, first joint nearly as long as vertex is wide, joints not closely set, with verticils of loosely appressed scales. The forewings are elongate-lanceolate and veins 6 and 7 appear to be stemmed. Hindwings narrowly lanceolate, costa emarginate in apical two-fifths. Hindwings narrowly lanceolate, costa emarginate in apical two-fifths. Hind tibiæ rough haired. The generic name *Pelates* is suggested.

"**H. ? (Tinea) martinella** Walker.—Dyar's List, p. 573, No. 6529.—*Mas.* nigro-cinerea; caput nigro-pilosum; palpi brevissimi; antennæ subsetulosæ; alæ anticæ nigro subconsperso, plaga disci fuscencenti.

"*Male*:—Blackish cinereous, head with short thick set black hair; palpi very short; Antennæ rather short, minutely setulose, shorter than the forewings. Wings narrow, fringe long. Forewings thickly specked with black; a brownish patch in the middle of the disc. Length of body 3 lines, of the wings 8 lines. St Martin's Falls, Albany River, Hudson Bay."

Unknown to me. I am indebted to Mr. A. Busck for transcript of this and the following species. I place these two species provisionally here, rather than in *Tinea* proper, on account of their narrow wings and long cilia, the coloration also would seem to favor this.

H. ? (Tinea) afflictella Walker—Dyar's List, p. 573, No. 6330.—"*Female.*—Blackish cinereous, slender. Head thickly clothed with short erect hairs. Palpi smooth porrect, nearly as long as the breadth of the head, third joint acute, a little shorter than the second. Antennæ much shorter than the forewing. Abdomen dark cinereous extending for nearly its entire length beyond the hindwing. Legs long, slender. Wings narrow with a very long fringe. Forewings rounded at the tip with three lines of black points, one near the costa, the other two near the interior border; exterior border very oblique. Hind wings dark cinereous. Length of body, 4 lines; the wings, 12 lines.

"St. Martin's Falls, Albany River, Hudson Bay."

Unknown to me.

LEUCOMELE gen. n.

Type *miriamella.*

Head entirely rough haired. Labial palpi cylindrical, drooping, slightly compressed and moderately stout; second joint slightly roughened beneath with scales, with apical bristles; terminal joint pendant, nearly as long as the preceding. Maxillary palpi plicate. Eyes rather small, prominent. Antennæ simple, about three-fifths

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the length of forewings, rather thick. Forewings elongate, without scale tufts; 11 veins, all free; 11 arises very near the base, 1^b simple. Hindwings lanceolate, costa retuse from just before the middle to apex; 8 veins; cell open between 3 and the common stem of 4, 5 and 6. Cilia over 2. Hind tibiæ fringed with long hairs.

A very distinct genus, closely allied to *Homosetia*, from which it differs in venation of hindwings, the open cell of the latter likewise distinguishes it from the other allied genera. One species.

L. miriamella n. sp.—Pl. III, fig. 8.—Labial palpi dark fuscous brown externally, second joint and apex of third whitish within. Maxillary palpi creamy white. Face yellowish white, vertex and thorax blackish brown, hairs of head somewhat tufted each side. Ground color of forewings white, overlaid with a rich dark brown, the latter condensed in the costal half of wing and in the apical part, except an irregular, rhomboidal costal spot just beyond the middle; in the basal part of dorsal half of wing, the dark scaling is less dense, two well-marked dashes on the fold and another obliquely above the outer plical dash, immediately behind the latter, at the end of cell is a rather pure white spot and a similar one between the two dashes on the fold. Cilia yellowish white, with a somewhat irregular dividing line, and five or six dark brown streaks extending from the dark apical part of wing, one of these expands into a distinct round spot in the apical portion; aside from these are numerous blackish, scattered scales. Hindwings fuscous with a faint metallic lustre, cilia concolorous. Abdomen fuscous above, tinged with silvery gray, underside of body silver gray. Legs grayish, anterior and middle, more or less fuscous externally; tarsal joints fuscous above.

Exp. 9.5–13.0 mm.; 0.38–0.52 inch.

Hab.—Pennsylvania (Hazleton; Mauch Chunk); Maryland (Plummer's Island).

A number of specimens were taken by my daughters on the trunk of an old cherry tree in June and July, and after one of which it gives me pleasure to name this interesting addition to our fauna.

ENCE Chamb.

Dyar's List, p. 574.

Head entirely rough haired. Labial palpi cylindrical, drooping; second joint but little longer than terminal, with strong apical bristles, terminal joint pointed. Maxillary palpi plicate. Antennæ about three-fourths the length of forewing, of moderate thickness, simple. Eyes round, salient. Forewings lanceolate, without scale tufts; 11 veins, 2 absent, 6 and 7 out of 5, 1^b simple. Hindwings narrowly lanceolate, costa retuse in its outer two-fifths; neuration feeble, 7 veins, 2 absent, 5 and 6 stalked, posterior median very

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close to dorsal margin, cell open between 3 and 4. Cilia nearly 3. In its narrow wings, closely resembling *Homosetia*, but venation differs entirely. One species.

O. hybromella Cham.—Dyar's List, p. 574, No. 6545.—Labial palpi brownish externally, apical half of second joint and apex of third whitish within. Maxillary palpi yellowish brown. Head yellowish white, intermixed with brownish on the vertex. Thorax and basal two-fifths of forewings maroon brown, the latter intermixed with darker spots; this darker space recedes somewhat in the costal portion of the wing, remainder of wing yellowish white, sprinkled with dark brown scales, especially towards the apex and forming several larger spots on the costa. Cilia pale yellow, sprinkled with brown scales. Hindwings gray with a brassy lustre; cilia grayish. Abdomen grayish fuscous. Legs pale yellowish, anterior and middle brownish externally.

Exp. 8.0-9.0 mm.; 0.32-0.36 inch.

Hab.—Kentucky; New Jersey (Essex County, Kearfott).

Two specimens in my collection, kindly given me by Mr. W. G. Kearfott.

The above description is slightly at variance with Mr. Chamber's description of this species; the dark basal space of forewing does not extend to the middle.

List of Species.

AMYDRIINÆ.

Amydria Clem.
- brevipennella n. sp.
- efrenatella Clem.
- coloradella n. sp.
- arizonella n. sp.

♀♀
- apachella n. sp.
- clemensella Ch.
- curvistrigella n. sp.
- pandurella n. sp.
- confusella n. sp.
- onagella n. sp.

♂♂♂
- obliquella n. sp.
- dyarella n. sp.
- marjoriecella n. sp.

Paraplesia gen. n.
- Buscklella n. sp.

Paraneura gen. n.
- simulella n. sp.
- ebrhornella n. sp.
- cruciferella n. sp.

Setomorpha Zell.
- majorella n. sp.
- sigmoidella n. sp.

Epilegis gen. n.
- cariosella n. sp.

Apotomia gen. n.
- fractiliniella n. sp.

Semiota gen. n.
- operosella, Zell.
- inamœnella Zell.
- transversestrigella n. sp.

Apreta gen. n.
- paradoxella n. sp.

Epichæta
- nepotella n. sp.

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TINEINÆ.

Scardia Tr.

♀

anatomella Grote.
coloradella n. sp.

♀♀

fuscofasciella Ch.
tessulatella Zell.
Busckerella Busck.
approximatella n. sp.

Xylesthia Clem.

pruniramiella Clem.
Kearfottella n. sp.

Abacobia gen. n.

carbonella n. sp.

Monopis Hüb.

♀

rusticella Hüb.

♀♀

biflavimaculella Clem.
marginistrigella Ch.
monachella Hüb.

♀♀♀

dorsistrigella Clem.
crocicapitella Clem.
irrorella n. sp.

Trichophaga Rag.

tapetiella L.

Phryganeopsis Wlsh.

brunnea Wlsh.

Incurvaria Haw.

♀

oregonella Wlsh.
russatella Clem.

♀♀

piperella Busck.
rheumapterella n. sp.
senescens Wlsh.
politella Wlsh.

♀♀♀

labradorella Clem.
æneovirens n. sp.

Greya Busck.

humilis Wlsh.
salenobiella Wlsh.
punctiferella Wlsh.

Cyane Ch.

vesaliella Ch.

Breckenridgia Busck.

acerifoliella Clem.
? chrysorella n. sp.

Isocorypha gen. n.

mediostriatella Clem.
chrysocomella n. sp.

Tinea L.

♀

misella Zell.
obscurestrigella Ch.
fuscipunctella Haw.
apicistrigella Ch.
orleansella Ch.
straminiella Ch.
bimaculella Ch.
trimaculella Ch.
carnariella Clem.
griseella Ch.
grumella Zell.
pellionella L.
misceella Ch.

♀♀

behrensella Ch.
occidentella Ch.
tusconella n. sp.

♀♀♀

croceocapitella Ch.
thoracestrigella Ch.
vicinella n. sp.
unomaculella Ch.
niveocapitella Ch.
leucocapitella Busck.
seminolella Beut.
ophrionella n. sp.
xanthostictella n. sp.
imitatorella Ch.
mandarinella n. sp.

♀♀♀♀

roborella n. sp.
oregonella Busck.
multistriatella n. sp.
Rileyi n. sp.

♀♀♀♀

molybdanella n. sp.
geniculatella n. sp.
arcella Fab.

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auripulvella Ch.
acapnopennella Clem.
defectella Zell.
apicisignatella n. sp.
angulifasciella n. sp.
marmorella Ch.
fuscomaculella Ch.
granella L.
cloacella Haw.
interstitiella n. sp.
fulvisuffusella n. sp.
maculabella Ch.
marginimaculella Ch.
fuscopulvella Ch.
nigroatomella n. sp.

Homostinea gen. n.
curvistrigella. n sp.

Tineola H. Sch.
biselliella Haw.

Tenaga Clem.
pomiliella Clem.

Hybroma Clem.
servulella Clem.

Triptodema gen. n.
sepulchrella n. sp.

Eudarcia Clem.
simulatricella Clem.
cæmitariella Ch.

Progona gen. n.
Skinnerella n. sp.
bipunctella n. sp.
floridella n. sp.

Homosetia Clem.
subgenus *Diachorisia.*
velatella Clem.
subgenus *Calostinea.*
argentistrigella Ch.
argentinotella Ch.
subgenus *Homosetia.*
cristatella Ch.
confusella n. sp.
chrysoadspersella n. sp.
costisignella Clem.
fasciella Ch.
maculatella n. sp.
subgenus *Stenoptinea.*
ornatella n. sp.
auriferella n. sp.

??
? septemstrigella Ch.
? heteropalpella n. sp.
? martinella Wlk.
? afflictella Wlk.

Leucomele gen. n.
miriamella n. sp.

Enoe Ch.
hybromella Ch.

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EXPLANATION OF PLATES.

PLATE I.

Fig. 1. Forewing of *Amydria dyarella.*
" 2. " " *Apotomia fractiliniella.*
" 3. " " *Tryptodema sepulchrella.*
" 4. ? *Incurvaria rheumapterella.*
" 5. " " *Homosetia ? septemstrigella.*
" 6. " " *Semiota operosella.*
" 7. " " *Xylesthia kearfottella.*
" 8. " " *Scardia approximatella.*

PLATE II.

Fig. 1. Forewing of *Scardia fuscofasciella.*
" 2. " " *Tinea geniculatella.*
" 3. " " *Tinea roborella.*
" 4. " " *Progona skinnerella.*
" 5. " " *Tinea multistriatella.*
" 6. " " *Tinea arcella.*
" 7. " " *Tinea angulifasciella.*
" 8. " " *Homosetia chrysoadspersella.*

PLATE III.

Fig. 1. Forewing of *Tinea mandarinella.*
" 2. " " *Tinea fuscomaculella.*
" 3. " " *Homosetia ? heteropalpella.*
" 4. " " *Tinea nigroatomella.*
" 5. " " *Amydria margoriecella.*
" 6. " " *Tinea ophrionella.*
" 7. " " *Tinea molybdanella.*
" 8. " " *Leucomele miriamella.*

PLATE IV.

Fig. 1. Neuration of *Amydria efrenatella.*
" 2. " " *Epilegis cariosella.*
" 3. Neuration (hind wing) of *Homosetia* (*Stenoptinea*) *ornatella.*
" 4. " (fore wing) of *Apotomia fractiliniella.*
" 5. " of *Paraneura simulella.*
" 6. " " *Apreta paradoxella.*
" 7. " " *Epichæta nepotella.*

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PLATE V.

Fig. 1. Neuration of *Abacobia carbonella.*
" 2. " " *Homosetia costisignella.*
" 3. " " *Hybroma servulella.*
" 4. " " *Breckenridgia acerifoliella.*
" 5. " " *Isocarypha mediostriatella.*
" 6. " " *Homosetia (Calostinea) argentinotella.*

PLATE VI.

Fig. 1. Neuration of *Progona bipunctella.*
" 2. " " *Tryptodema sepulchrella.*
" 3. " " *Tenaga pomiliella.*
" 4. " " *Semiota inamœnella.*
" 5. " " *Cyane vesaliella.*
" 6. " " *Œnæ hybromella.*
" 7. " " *Leucomele miriamella.*
" 8. " " *Homostinea curviliniella.*
" 9. Head and palpi of *Abacobia carbonella.*
" 10. " " palpus of *Epichæta nepotella.*
" 11. " " " " *Apreta paradozella.*
" 12. Hind tarsus of *Apreta paradozella.*

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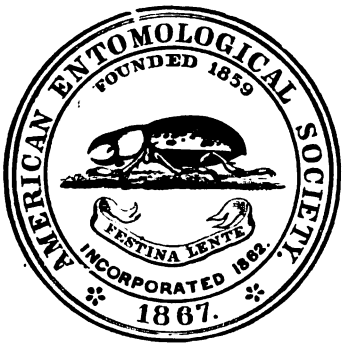

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AUG 1905

REVISION OF THE PTINIDÆ OF BOREAL AMERICA.

BY H. C. FALL.

To American students, who, in accepting the classification sanctioned by our two great Coleopterists, Drs. LeConte and Horn, have long been accustomed to include in this family the Bostrychinæ and Lyctinæ, the above title may appear too pretentious. I fully concur with the opinion, which seems to be gaining ground generally, that the Bostrychinæ are worthy of ranking as an independent family. The Lyctinæ have always been a source of trouble and many and diverse have been the opinions as to their relationship. It is by no means certain that their affinities are not more strongly Clavicorn than Serricorn and possibly they could not better be disposed of than in the manner suggested by Major Casey in his Coleopterological Notices II. (Annals of New York Academy of Sciences, p. 494), where reasons are given for including them in a more broadly conceived Cucujidæ.

Removing from the Ptinidæ these disturbing elements—the Bostrychinæ and Lyctinæ—the family is divisible into two very unequal subfamilies, the Ptininæ and Anobiinæ, long separated by systematists primarily by the difference in the point of insertion of the antennæ. These two subfamilies approach one another in our fauna through the genera *Hedobia* and *Eucrada*, hitherto included among the Ptininæ, but which in the present paper are transferred to the Anobiinæ, with which subfamily they appear to have more in common, and which because of its greater heterogeneity is less disturbed by their reception. In any case the two genera are truly intermediate forms, and whichever course prevails their relative position is not affected.

The Ptininæ in our fauna have never received monographic treatment, partly, it is presumed, because of the small number of species involved, but still more on account of the large proportion of monotypic genera—eight out of the nine named in our lists being represented by single species.

The Anobiidæ were made the subject of an investigation by LeConte in 1865 (Proc. Acad. Sci. Phila., p. 224), and the arrangement of genera proposed by him at that time appears to me to be on the whole distinctly more natural than any other that has been ad-

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vanced either by earlier or later authors. The number of species known to us has greatly increased in the forty years that have elapsed since this memoir was published, but the sequence of genera adopted in the present essay does not differ very greatly from that suggested by our most philosophical Coleopterist.

The preparation of the present paper was begun nearly two years ago, since which time it has absorbed the major portion of the time which the writer could spare for Entomological work. The task has not been a light one nor are the results in all respects what the author could wish, but whatever the degree of success attained it is in no small part due to the prompt and generous responses that have almost invariably been made to all appeals for information or specimens. It is a pleasure to acknowledge the assistance rendered in this way by numerous friends and correspondents, more especially to Messrs. Blanchard, Bowditch and Hayward of Massachusetts; Schaeffer, Beyer and Palm of New York; Liebeck and Boerner of Philadelphia; Schwarz, Chittenden and Barber of Washington; Dury of Cincinnati; Wickham of Iowa; Knaus of Kansas, and Fuchs, Van Dyke, Fenyes, Blaisdell and Hopping of California. Nearly all of whom sent me the greater part of their material for study.

To Mr. Blanchard I am especially indebted for numerous valuable descriptive and critical notes upon the LeConte material, as well as a continued helpful interest in the progress of the work.

My heartiest thanks are due to Mr. Henshaw of the Museum of Comparative Zoology at Cambridge, Mass., for the privilege of making a subsequent personal examination of the LeConte types; to Dr. Howard and Mr. Schwarz of the National Museum, Dr. Skinner of the Philadelphia Academy and to Dr. Holland of the Carnegie Museum at Pittsburg—now containing the Ulke and Hamilton collections—for affording me every facility for studying the collections under their charge.

Through the kind offices of Mr. Henry Wenzel and Dr. Skinner the entire Horn collection, excepting the few types and uniques, has been sent to me for study, and Mr. Fuchs has rendered the same service with the collection of the California Academy of Sciences. Of the native material studied, the Hubbard and Schwarz collection is, as usual, by far the richest in both specimens and species, and, as on previous occasions, this wealth of material has been turned over

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to me unconditionally by Mr. Schwarz, to whom I am indebted for this privilege and, indeed, for more favors than I can well enumerate.

Finally, to the Rev. Mr. Gorham of Southampton, England; M. Pic of Digoin, France; Mr. Edward Reitter of Paskau, Austria, and to Messrs. Ganglbauer and Holdhaus of the Royal Museum of Vienna, I am very grateful for the loan or gift of many of the European species, as well as others from Central America and Mexico, including in some cases even unique types.

In drawing up the following descriptions the author has not attempted to make them anatomically exhaustive, but merely to set forth those characters which experience thus far shows to be most useful for comparative study. It does not necessarily follow that these characters will prove equally significant in a wider field, though the personal examination of many European species, and all but two of the recognized European genera, convinces the author that with very few exceptions the scheme followed applies equally well to the Nearartic and Palearctic faunas at least.

PTININÆ.

Mentum triangular, usually acuminate in front and foveate or impressed at base. Palpi short, labial 3-jointed, maxillary 4-jointed, similar in form; basal joint slender, curved; second and third shorter and stouter; terminal joint largest, oval, pointed. Labrum transverse, truncate or feebly emarginate. Antennæ, inserted on the front and more or less approximate at base, rather long and moderately stout, filiform or feebly serrate, 11 jointed (9-jointed in *Pitnus*), the joints not very variable in length. Eyes variable. Prothorax small, without side margin, usually constricted behind, the disk anteriorly frequently gibbous or tuberculate. Elytra much wider than the prothorax, usually oval or globose, but more elongate, with sides nearly parallel in one or both sexes of many species of *Ptinus*. Prosternum very short, separating the prominent coxæ, the coxal cavities widely open behind. Mesosternum small, subtriangular, the side pieces not reaching the coxæ, which are subglobose, only moderately prominent and distinctly separated. Metasternum moderate or long, side pieces narrow; hind coxæ more widely, sometimes very widely separated. Abdomen with five ven-

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tral segments (four in *Gibbium*); the second, third and fifth longer than the first and fourth; the fourth sometimes very short. Legs long, not contractile; trochanters in the axis of the thighs, very long in *Gibbium;* thighs more or less clavate; tibiæ slender, with two small or minute terminal spurs. Tarsi 5 jointed; joints 1–4 decreasing in length; fifth longer, but usually shorter than the first; claws small, slender, simple, strongly divergent or divaricate.

I have removed *Hedobia* and *Eucrada* from this subfamily and placed them at the head of the Anobiinæ. There is, I think, no doubt that they fall naturally between the Ptininæ and the typical Anobiinæ, but the points of divergence from the former are far more numerous than the points of contact, and are generally in the direction of the latter, which on account of its greater heterogeneity is less disturbed by their reception. In the Classification, by LeConte and Horn, the antennæ of *Hedobia* and *Eucrada* are said to be inserted on the front. It would be more accurate to say that the point of insertion is at the antero-interior margin of the eye (slightly more frontal in *Eucrada*) and really differs very little from its position in the Anobiinæ; the apparent difference being largely due to the fact that the front is not margined above the base of the antennæ.

In the European genus *Dryophilus*, belonging unquestionably to the Anobiinæ, the antennæ are still more frontal in position, from which it will be seen that too much stress should not be laid upon this aberrancy.

The antennæ in *Hedobia* are it is true similar to those of *Ptinus*, and the prothorax in both this genus and *Eucrada* is unmargined at sides; but on the other hand the antennæ in *Eucrada* approach rather *Xyletinus* and *Vrilletta* of the Anobiinæ, and in *Gastrallus* of the latter subfamily the thorax is almost without side margin, and in one species of *Hadrobregmus* is completely so. Furthermore, both *Hedobia* and *Eucrada* differ conspicuously from all our genera of Ptininæ in palpal formation; in the apically bidentate mandibles; in the absence of a prosternal process separating the front coxæ; in the subequal ventral segments, the fourth being scarcely shorter than the third, and the first not narrowed by the posterior coxæ; in their non clavate femora; and finally, in the stout tarsi, the terminal joint being broadly triangular with perfectly divaricate claws.

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I. Elytra widely embracing the abdomen at sides; the ventral surface about one-third the width of the elytra, the latter polished and impunctate ..... GIBBIINI.

Entirely glabrous above, eyes subfrontal, ventral segments four, hind trochanter two-thirds as long as the femur..... ..... **Gibbium.**

Head and thorax densely squamose, eyes lateral, ventral segments five, hind trochanter scarcely one-third as long as the femur.. **Mezium.**

II. Elytra much less widely embracing the abdomen, the ventral segments nearly equal in width to the elytra (except *Sphæricus*), elytra always punctate and pubescent..... PTININI.

Elytra confusedly punctate, ventral surface but little more than half as wide as the elytra..... ..... **Sphæricus.**

Elytra punctate-striate, ventral surface nearly equal in width to the elytra.

Antennæ 9-jointed, size minute..... **Pitnus.**

Antennæ 11-jointed.

Eyes relatively very small, nearly semi-circular, their lower segment with the lenses imperfectly developed and clothed with scales; scutellum very small or completely invisible; elytra globose, similar in the sexes; metasternum scarcely as long as the second ventral segment; posterior trochanters reaching the margin of the elytra when directed outward.

Prothorax narrowed but not constricted behind... **Trigonogenius.**

Prothorax constricted behind ..... **Niptus.**

Eyes rounded, not squamose inferiorly, scutellum distinct, trochanters not reaching the elytral margin.

Eyes rather small in both sexes; prothorax feebly constricted close to the base; elytra similar in the sexes; metasternum subequal in length to the second ventral segment; first and second ventral sutures nearly obliterated at middle .... **Niptinus.**

Eyes moderately large, often very large in the male; prothorax strongly constricted posteriorly; elytra parallel or nearly so in the male, oval in the female of the subgenus *Ptinus;* metasternum much longer than the second ventral segment in the male; ventral sutures distinctly impressed..... **Ptinus.**

GIBBIINI.

The two genera constituting this tribe are at once distinguishable from all others by the greatly contracted ventral surface; the inflated polished and impunctate elytra and the densely hairy or scaly under surface and appendages. On account of the very short sterna the legs are placed close together, especially so in *Gibbium*, in which the acetabula are almost perfectly contiguous from front to back. The reduction of the number of ventral segments in *Gibbium* appears to result from the coalescence of the first and second.

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GIBBIUM Scopoli.

Mentum elongate-triangular, trophi substantially as defined of the subfamily, the labrum emarginate. Head oblong-oval, striate laterally. Eyes very small, elliptical, flat, subfrontal in position. Antennæ inserted before the eyes; not quite as long as the body; rather stout, subfiliform, slightly attenuate; joints 1–10 not very unequal, the eleventh acuminate and longer than the two preceding united. Prothorax very short, conical, angulate at base, the sides straight, continuing the curve of the elytra. Scutellum invisible. Elytra connate, strongly inflated, widely embracing the sides of the body and diminishing the width of the ventral surface to scarcely one-third that of the elytra.

Prosternum excessively short, the coxæ contiguous with its anterior margin; intercoxal process moderately separating the coxæ, not attaining their summits. Middle coxæ rather narrowly, hind coxæ small and widely separated; the metasternum truncate, without intercoxal process of the first ventral segment. Abdomen with four ventral segments, segments 1–3 slightly decreasing in length; fourth nearly as long as the first three united. Trochanters very long, the posterior ones two-thirds as long as the femur; tarsi somewhat compressed laterally, joints 1–4 decreasing in length; fifth longer, but shorter than the first; claws small, divergent.

The upper surface is glabrous and impunctate throughout; the under surface, legs and antennæ densely clothed with short coarse yellowish hair, which is longer along the interior margin of the tibiæ and forms a dense fringe on their outer edge. Our only species is the cosmopolitan :—

G. psylloides Czemp.

This species needs no further description than that given in the generic diagnosis above. In the few specimens examined the metasternum is tuberculate at middle; I cannot say whether this is a sexual character or not. This very singular insect is said to live in houses, etc., where it breeds in all sorts of dried animal substances. Mr. Fuchs writes me that he has taken it not infrequently in San Francisco, crawling upon the walls of his kitchen, especially in November.

The specimens before me are from Virginia, Tennessee, Georgia, Alabama, Louisiana, California (San Francisco) and Lower California (San Jose del Cabo).

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MEZIUM Curtis.

Agrees nearly with *Gibbium*, except as follows: Elytra more compressed laterally. Eyes equally small and much more distant. Head, prothorax and basal margin of the elytra extremely densely clothed with pale yellow scales and squamiform hairs; the prothorax sulcate and tuberculate on the disk, squarely truncate behind. Lower surface, legs and antennæ clothed with a dense crust of appressed scales, with scattered erect or suberect elongate scales. Prosternal process reaching the summits of the coxæ; metasternum broadly emarginate behind; ventral segments fine, first exceeding short at sides, longer at middle, 2–4 very short, last segment equal in length to all the preceding united. Last antennal joint but little longer than the tenth, oval, pointed.

M. americanum Lap.

Our only species in the genus, and too well known to need further description. The elytra in very fresh specimens are sparsely clothed with erect bristles, which are soon lost. Its habits are similar to those of *Gibbium*.

This species is widely distributed in the eastern United States, more especially at the south. I have seen it from New York City, Georgia, Florida, Louisiana, Texas and California (San Francisco). It is reported also from Cape Verd, Canaries, Madeira, Greece, New Caledonia, Chili and Peru. The single California specimen was submitted by Mr. Fuchs, who takes it in his house, but much more rarely than he does *Gibbium psylloides*. He suspects that both species make their way into his rooms from a drug store beneath.

PTININI.

The genera which make up this tribe are on the whole not very strongly differentiated, but I can see no good reason for attempting a reduction of the number considered as valid—in fact, admitting their validity—consistency seems to require the addition of one more—*Niptinus*—to those already described. With the exception of *Pitnus*, which does not fit very well in any linear arrangement, the sequence of genera is fairly natural.

Beginning with *Sphæricus*, in which the ventral surface is relatively narrow, suggesting the Gibbiini, the body strongly globose, eyes small in both sexes, the prothorax not constricted, the legs

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short and stout, there is a progressive change to the parallel form of body in both sexes, wide ventral surface, large eyes, strongly constricted prothorax and longer, more slender legs of many species of *Ptinus*.

SPHÆRICUS Wollaston.

Mentum elongate-triangular; labrum subtruncate in front; eyes small. Antennæ scarcely more than half as long as the body, inserted between the eyes, from which they are as distant as from each other; joints 1–9 gradually decreasing in size, the intermediate ones submoniliform; last joint wider, oval, and as long as the ninth and tenth united. Prothorax not constricted at base. Scutellum invisible. Elytra globose, not punctured in rows. Anterior coxæ moderately separated, the intercoxal process not reaching the summits of the coxæ; middle coxæ slightly more distant than their own diameters; hind coxæ small, very widely separated, contiguous with side margin of elytra. Metasternum very short, scarcely equal in length to the second ventral segment. Ventral surface rather more than half as wide as the elytra; first segment short, second and third equal and a little longer, fourth scarcely half as long as the third, fifth subequal to the third and fourth united. Legs rather short and stout; tarsi short, joints 1–4 decreasing as usual, last joint narrower and as long as the two preceding together; claws divaricate.

S. gibboides Boield.—Stout, brown, opaque; densely clothed above with appressed scales varying in color from yellowish to pale brown, and with sparse intermixed scale-like hairs which are also closely recumbent and very inconspicuous. In most examples the scales are paler in a fairly well defined posterior elytral fascia, and narrowly along the median line of the prothorax. Prothorax as wide as long, base and apex subequal, sides feebly arcuate, widest at middle, disk without grooves or callosities, closely coarsely punctate, the sculpture concealed by the scales. Elytra globose-oval, surface dull, not distinctly punctate. Beneath finely sparsely pubescent; metasternum closely very coarsely punctate; ventral segments less coarsely punctured, the punctures becoming finer posteriorly. Length 1.8-2.2 mm.

This species, which is somewhat widely dispersed in the Mediterranean region of Europe and northern Africa, has been found in this country only at San Francisco, California, where it has made itself obnoxiously conspicuous as an herbarium pest in the California Academy of Sciences. Mr. Fuchs also writes me of finding a quantity of them in a can of red pepper--"more beetles than pepper." He also states that they on one occasion devoured a box full of Coleoptera which had not been looked to for a considerable time. The beetles are to be found at all seasons of the year.

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PITNUS Gorham.

Mouth parts substantially as in neighboring genera; eyes small, truncate beneath. Antennæ 9-jointed; first joint thickest, oval; 2–8 narrower and gradually shorter, the outer ones nearly as wide as long; ninth joint obovate, equal to the two preceding united, and nearly as wide as the first. Prothorax without distinct ante-basal constriction. Scutellum wanting. Elytra ventricose, punctate striate. Front and middle coxæ distinctly separated; hind coxæ very distant, the trochanters reaching the elytral margin. Metasternum subequal in length to the second ventral segment, broadly roundly emarginate behind. Ventral segments 1–3 subequal in length at the middle, the first shorter at sides; fourth very short, arcuate, embracing the fifth at sides, the latter cordate and a little longer than the third. Legs moderate in length, rather slender, thighs feebly clavate. Tarsi not laterally compressed, fifth joint subinflated, slightly wider than the fourth, and inserted at its apex; claws divaricate.

The single and singular species upon which this genus is founded is remarkable as being the smallest of the family. The antennal structure is unique.

P. pygmæus Gorh.—Black; head and prothorax alutaceous, dull; elytra feebly shining. Front rather narrow, but not carinate between the antennal foveæ; antennæ at base nearer to the eyes than to each other. Prothorax as wide as long, sides parallel and broadly arcuate, basal constriction feeble and consisting of a marginal impression which is better defined at sides. Both the head and prothorax are rather coarsely but not closely punctured and with scattered short pale recumbent hairs. Elytra oblong-elliptical, twice as wide as the prothorax and about two and one-half times as long; punctate-striate, the punctures coarse and closely placed, and each bearing at its anterior margin a short, stout, recurved hair, which lies across the puncture; interspaces scarcely as wide as the strial punctures, impunctate and glabrous. Beneath glabrous and almost impunctate. Length 1 mm.

Described from Guatemala. The specimens before me were taken by Mr. Beyer in the cape region of Lower California.

TRIGONOGENIUS Solier.

Mentum nearly as wide as long, carinate and subacuminate in front, feebly impressed behind; palpi as usual; labrum emarginate. Eyes small, rounded, a broad segment beneath clothed with scales making them appear truncate just below the middle. Antennæ slightly longer than half the body, their point of insertion nearer to

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the eyes than to each other, front flat between them; first joint stout, longer than wide, 2–10 narrower and of equal width; second half the length of the first; third nearly as long as the first and equal to the fourth and fifth united; 4–10 subequal and slightly longer than wide; eleventh a little wider than the preceding and as long as the ninth and tenth united, oval, acuminate. Prothorax a little wider than long, widest at middle, sides quite strongly rounded, not constricted at base, broadly feebly sulcate at middle, and impressed each side near the base. Scutellum invisible. Elytra globose, a little depressed, nearly twice as wide as the prothorax. Anterior coxæ rather narrowly separated; the middle coxæ more widely separated, but distant less than their own diameter; hind coxæ widely separated, the trochanters barely reaching the elytral margin when directed outward. Metasternum scarcely as long at middle as the second ventral segment, emarginate behind. Second and third ventral segments equal, and a little longer than the first at the middle, the post coxal width of the latter only about half its median or lateral width; fourth very short, fifth fully as long as the second. Thighs rather stout and moderately clavate; front tibiæ short, almost triangular; hind tibiæ slender; tarsi about three-fourths the length of the tibiæ, slender, fourth joint not wider; claws divergent. Body densely clothed throughout with scales intermixed with erect bristles.

T. globulum Sol.—Robust, brown, densely clothed above and beneath with elongate pale yellowish brown scales, marmorate with darker brown on the elytra, and with a small elongate blackish brown spot on each side of the suture at base. On the prothorax the scales are replaced by an exceedingly dense mat of interlacing hairs. The pronotum appears to be broadly longitudinally sulcate at middle and impressed laterally at base, but these effects are almost entirely due to variations in the length of the vestiture. The surface of the pronotum is rather closely granulose, that of the elytra finely punctulate and with rows of larger punctures which are, however, quite concealed by the scaly covering. Each interspace of the elytra bears a row of short erect bristles, and on alternate interspaces these short bristles alternate with longer ones; there are also some longer curved hairs at the humeri, and at the front and sides of the prothorax. Length 2.5 mm.

This insect is not rare at and near San Francisco, where it is found on the ground under rubbish, but does not occur in houses. I have seen examples from Oregon, and also a single specimen found on a dead cormorant at Pasadena, California, by Mr. F. S. Daggett.

Specimens of this species received many years ago from San Fran-

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cisco by Mr. Ulke and given to LeConte were described by him in 1866 as *farctus*, and this name has long stood on our lists. It is to Mr. Schwarz, I think, that we owe the discovery of the identity of *farctus* with the *globulum* of Solier, previously described from Chili; and in the National Museum material there is a Chilian example which completely justifies this conclusion.

NIPTUS Boildieu.

The structural differences between this and the preceding genus are very few indeed, being confined practically to the difference in the form of the prothorax, which is distinctly constricted behind in *Niptus*, but not at all so in *Trigonogenius*. *Niptus* is represented by ten species in the European fauna, varying so greatly among themselves in minor points of structure as to cause their separation into several subgenera. In our own fauna only a single species has been known until the recent discovery of the European *hololeucus* at Montreal.

1. **N. ventriculus** Lec.—Brown, moderately shining, head and prothorax subequal in width and scarcely half as wide as the elytra; the latter globose. Head, antennæ, legs and lower surface clothed densely with small pale yellow scales and scattered longer bristle-like hairs of the same color. Antennæ half as long as the body, first joint stouter, joints 2-10 subequal, longer than wide; last joint as long as the two preceding and slightly wider, oval, pointed. Front flat between the antennal foveæ. Prothorax nearly as wide as long, constricted behind, disk bituberculate each side in a transverse line, surface granulose and clothed not very densely with coarse yellowish hair. Elytra with unimpressed rows of rounded perforate punctures, each interspace with a single series of recurved setæ, the alternate ones with longer erect hairs. The punctures are not setigerous, but there is a recurved bristle similar to those of the interspaces close to the front margin of each one. Front coxæ distinctly though rather narrowly separated; middle coxæ a little less close; hind coxæ very widely distant, the trochanters passing the elytral margin. Metasternum at middle subequal in length to the second ventral segment. Ventral sutures straight, the fourth segment very short; the fifth longest, parabolically rounded at apex. Thighs very strongly clavate; tibiæ and tarsi moderately slender. Length 2.3-3 mm.

This insect ranges from Texas to Southern California. The type was taken at Santa Fé, New Mexico. It has been found by Wickham at Marfa, Texas, by Schwarz at Winslow, Arizona, where also Mr. Wickham records the finding of a colony under a log, and by Coquillet in Los Angeles County, Cal. It occurs also in Mexico.

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2. **N. hololeucus** Fald.—Reddish brown, densely clothed throughout with small appressed fulvous squamiform hairs and suberect bristles of the same color. The size is larger than in *ventriculus*, the antennæ more slender, the tenth joint about two and one-half times as long as wide, eleventh longer but not equal to the two preceding united. Prothorax less than half as wide as the elytra, not tuberculate on the disk. Elytra with perfectly unimpressed rows of very fine distant punctures, accompanied by rather short suberect setæ; each interspace with a line of similar but rather longer setæ. First and second ventral sutures bent forward at middle; legs longer, the thighs more slender at base than in *ventriculus*.

This common European species has been found in large numbers in a house in Montreal, Canada, the identification having been made at Washington from specimens sent to the National Museum by Dr. Fletcher.

NIPTINUS n. gen.

It has been thought best to set apart as a distinct genus a small number of species which partake of the characters of both *Niptus* and *Ptinus*, though much more closely allied to the latter. Approach is made to *Niptus* in the relatively short metasternum, which is, however, not quite so short as in that genus, and in the short stout form of body, which is not sexually modified. The eyes are relatively smaller than in *Ptinus* (except perhaps in the apterous females of that genus), but are of similar shape and not encroached upon beneath by scales as in *Niptus*. In the well developed scutellum, character of vestiture, sculpture of the upper surface and form of legs and antennæ there is a close agreement with *Ptinus*; but the complete obliteration at middle, of the first and second ventral sutures, and the dense sculpture of the ventral surface, are characters quite foreign to the latter genus so far as known to me.

It is quite certain that *Trigonogenius niveus* and *T. arcuatus* of Gorham, from Central America and Panama, should be referred to *Niptinus;* indeed, the former resembles very closely *unilineatus* Pic. The first species described below is to be regarded as the type of the genus.

1. **N. ovipennis** n. sp.—Piceous, shining, legs and antennæ rufous. Head finely granulose, clothed with very short white recumbent hairs; labrum strongly transverse, trapezoidal, with yellowish marginal ciliæ. Antennal foveæ narrowly separated; antennæ about three-fourths as long as the body; first joint stout, oval; 2-10 similar, obconic, about twice as long as wide, just visibly increasing in length toward the apex; last joint oval, one-half longer than the tenth, but of equal width. Prothorax a little longer than wide; sides feebly arcuate, basal constriction evident but not strong; surface closely granulose, disk not tubercu-

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late, with short blackish suberect hairs, and a narrow median white vitta. Elytra one-half longer than wide and twice as wide as the prothorax, oval, punctate striate, each interspace with a series of fine erect fuscous hairs about equal in length to the width of the first two elytral interspaces; base thinly clothed with similar ochreous hairs, each elytron with an apical, two post median and a subbasal patch of dense appressed white hair. Metasternum and ventral surface densely punctate; pubescence beneath rather dense, white on the prothoracic flanks and parapleuræ, grayish on the abdomen. Fourth ventral segment two-thirds as long as the third, fifth segment but slightly longer than the fourth. Legs slender, the thighs distinctly but not strongly clavate; fourth tarsal joint a little dilated, slightly emarginate at apex; fifth joint inserted upon the upper face of the fourth, narrow, cylindrical; claws small, divaricate. Length 2.3 2.6 mm.

Described from five examples collected by Mr. Soltau at San Antonio, Texas, in June, and now in the National Museum collection. The subbasal spot or spots of white hair are easily removed by abrasion and I do not feel sure of their exact form. The maculation is of the same general character as in *unilineatus*, and this fact, together with its larger size and oval elytra, led me at first sight to suspect it might be the female of that species, as did also M. Pic, to whom I sent a specimen for examination. This is not the case, however, as I have an undoubted female of *unilineatus* before me; moreover, the other differences are evidently specific rather than sexual in nature.

2. **N. unilineatus** Pic.—Very similar to *ovipennis*, except as follows: the color is entirely black, except the tibiæ and tarsi, which are brownish red. Elytra scarcely twice as wide as the prothorax, sides parallel for two-thirds their length; humeral angles right, narrowly rounded. Antennæ a little stouter, the pubescence of the first eight joints largely whitish, that of the last three blackish in color. Prothorax more sparsely granulate, the granules well separated, the surface between them shining. Elytra without ochreous hair at base, the subbasal fascia of white hair well developed, straight at sides, posteriorly angulate on the disk and attaining the suture close to the scutellum. As in *ovipennis* the pubescence of the legs is white exteriorly, but yellowish or grayish interiorly. Length 2-2.4 mm.

Brownsville, Texas. Specimens collected by and received from Mr. Schaeffer. Others are in the National Museum collection. The identification of this species is due to M. Pic, to whom I sent an example for examination. He writes that the Brownsville specimens differ slightly from his type, which was described from an unknown locality in Mexico, but that the differences are too small to be considered specific.

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PTINUS Linn.

Mentum triangular; mandibles robust, simple at tip, but with a small internal tooth near the middle. First joint of maxillary palpi very slender and strongly arcuate, intermediate joints short, subtriangular, terminal joint longer, oval, acuminate; labial palpi similarly formed. Labrum transverse, rounded and ciliate in front; epistoma triangular, a little emarginate. Eyes rounded, moderate or large, frequently distinctly larger and more prominent in the male. Antennæ approximate at base, filiform, first joint robust, second smallest, joints 3–11 elongate, subequal or slightly increasing in length, the individual joints either cylindrical or gradually wider from base to apex. Prothorax strongly constricted posteriorly, disk usually granulate and frequently tuberculate. Scutellum distinct, triangular. Elytra oblong elongate in both sexes of subgenus *Gynopterus*; elongate subparallel in the male and oval in the female of subgenus *Ptinus*; punctate striate, variously clothed with recumbent hairs or scales and erect bristles. Front coxæ separated by a narrow prosternal lamina; middle coxæ more distinctly separated; hind coxæ not very distant, the trochanters falling far short of reaching the elytral margin. Metasternum variable in length, usually much longer than the second ventral segment, but relatively short in those females with oval elytra. Ventral segments 1–3 subequal in length at the middle, the first much shorter behind the coxæ; fourth nearly as long as the fifth in *Gynopterus*, but much shorter in *Ptinus*. Legs long and slender; thighs quite strongly clavate; tarsi somewhat compressed laterally, first joint equal to the two or three following; fourth narrow, not bilobed in any of our species; fifth slender subequal to the two preceding; claws slender, simple, strongly divergent.

The number of species—twenty-seven—treated in the following pages is a very substantial increase over the six that have stood on our lists for many years; yet there are doubtless others awaiting discovery, though it is not likely that our fauna will prove to be as rich as the European, in which over fifty species are recorded. As indicated above, only two of the somewhat numerous Palearctic subgenera are represented with us. Of these *Ptinus* embraces those species in which there is a marked sexual difference in the form of the body, and the fourth ventral segment is relatively short; the rest of our species may, I think, be referred to *Gynopterus*, in which the

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sexes are nearly alike in form, and the fourth ventral segment much longer. In none of our species is the fourth tarsal joint bilobed, as it is said to be in some European species, nor does this structure obtain with us in any of our genera of this tribe, though feebly approached in *Niptinus*.

In an arrangement of species, the subgenus *Ptinus* should precede *Gynopterus*, the short fourth ventral segment, the oval elytra in the female, with the accompanying short metasternum, and the habits of a number of the species allying them naturally with the preceding genera. In *Ptinus* there is great uniformity in most details of structure, but good characters exist in variations of bodily form or vestiture, which enable the species to be separated without much difficulty when both sexes are at hand. In *Gynopterus*, as represented with us, there is less uniformity among the species as a whole, but there is a central homogeneous group, represented by *4 maculatus* and *interruptus*, which is diffused throughout our territory from the Atlantic to the Pacific, and extends into Mexico and Central America, and which appears to be peculiar to this continent; at least I have seen no European analogue. Nearly all the difficulties encountered in the study of our species center in this group, in which the tendency to form local races, even within the same faunal area, renders the determination of specific limits a matter of great difficulty. A careful study of the material at hand enables me to define nine species, divisible into two unequal subgroups, the first containing *4-maculatus* and *prolixus* distinguished by the very elongate male antennæ with filiform joints; the second containing *hystrix*, *eximius*, *texanus*, *interruptus*, *concurrens*, *fallax* and *vegrandis*, in which the antennæ in both sexes are subserrate. Throughout the genus there are more or less pronounced sexual differences in the size of the eyes and length of the antennæ, and in the true *Ptinus* we may add form of body and sometimes vestiture. In *Gynopterus*, with the exception of a small apical ventral tubercle in the males of certain species of the *interruptus* group, I have observed no secondary sexual characters other than the universal ones above mentioned. The primary sexual characters are so far as studied practically identical within the limits of each subgenus, but differ so conspicuously from each other as to suggest their separation as distinct genera.

In *Ptinus* the side pieces of the male genitalia are semimembran-

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ous, nearly straight, somewhat contorted, gradually tapering to tip, and closely ciliated on their external margin; the copulatory spicule laterally compressed, curved and more obtusely pointed. In *Gynopterus* the lateral pieces are corneous, flattened and arcuate, as viewed from above, widest just before the tip, which is finely ciliate; the copulatory spicule vertically compressed, straight, slender and finely aciculate.

I. Elytra dissimilar in form in the sexes; elongate, subparallel in the male; oval, more or less ventricose in the female; fourth ventral segment short; female apterous .....Subgenus PTINUS.
Setæ of strial punctures well developed, usually more or less bristling.....2.
Setæ of strial punctures minute and contained entirely within the punctures .....5.
2. Setæ of elytral interspaces equal or subequal in length .....3.
Alternate elytral interspaces with longer erect hairs.....4. **villiger.**
3. Humeri prominent, sides of elytra nearly straight or even a little sinuate toward the base.....4.
Humeri small, sides of elytra slightly arcuate .....3. **bicinctus.**
4. Elytral setæ longer, subbasal and subapical spots of recumbent scales wanting in the male, represented in the female by coarse appressed hairs which are present only in the humeral region; surface of head polished. 1. **brunneus.**
Elytral setæ shorter, subbasal and subapical patches of pale scales conspicuous, especially in the female; head alutaceous .....2. **fur.**
5. All the elytral interspaces setiferous .....6.
Interspaces 2-4-6 (at least in the female) nonsetiferous, setæ short and equal in length throughout .....5. **alternatus.**
6. Eyes very large, elytral setæ (♂) very short and much inclined, the recumbent vestiture squamiform.....6. **cælebs.**
Eyes smaller, elytral setæ longer and more erect, recumbent vestiture more hair like .....7.
7. Recumbent hairs relatively dense and more uniformly distributed, fulvous or fulvocinereous in color .....8.
Recumbent hairs less uniformly distributed, largely condensed in subbasal and subapical transverse spots, especially in the female, color white or nearly so .....9.
8. Bristles of elytral interspaces erect and not recurved .....7. **verticalis.**
Bristles of elytral interspaces inclined and recurved .....8. **gaudolphei.**
9. Elytral setæ (♀) unusually long (Southern California).....9. **agnatus.**
Elytral setæ (♀) much shorter (Middle California, Oregon)..10. **cognatus.**
II. Elytra similar in form in the sexes, oblong, more or less elongate; fourth ventral segment longer; both sexes winged...Subgenus GYNOPTERUS.
Longer hairs of the elytra excessively developed, nearly as long as the width of the prothorax at its narrowest part .....11. **longivestis.**
Longer hairs of the elytra much shorter than the width of the prothorax at its narrowest part.....2.

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2. Setæ of the strial punctures minute, recumbent and lying entirely within the punctures ... .12. **californicus.**
Setæ of the strial punctures much longer and distinctly bristling .....3.
3. Elytra with pale recumbent hairs in addition to the erect setæ.....5.
Elytra without recumbent hairs, prevailing color black.....4.
4. Prothoracic constriction smooth and polished, elytral punctures not stellate, oblique at base .....13. **strangulatus.**
Prothoracic constriction granulate like the rest of the surface, elytral punctures stellate, not oblique at base; head, prothorax, and sometimes the base of the elytra rufous .....14. **falli.**
5. Disk of prothorax strongly elevated and compressed .....16. **tumidus.**
Disk of prothorax normally convex .....6.
6. Color throughout nearly uniformly testaceous or brown .....15.
Black, the humeri and apex of the elytra bright rufous; posthumeral and posterior fascia of white recumbent hairs conspicuous; form rather short and stout.....15. **bimaculatus.**
Rufous, the elytra with a broad black or piceous median fascia which is interrupted at the suture; base, suture and apex usually conspicuously pale, but sometimes more or less completely suffused with the darker color .....7.
7. Vestiture very long, elytral punctures coarse, the interspaces relatively narrow, but little if any wider than the punctures.....19. **hystrix.**
Vestiture shorter, interspaces of elytra at middle of disk usually nearly or quite twice as wide as the punctures.....8.
8. Oblique discal dash of pale hairs limited to a spot on the third interspace; color nearly piceous throughout, the base and apex of the elytra sometimes obscurely rufescent; size large.....20. **eximius.**
Oblique median dash of pale hairs extending onto the fourth interspace, base, apex and suture of the elytra distinctly rufous, except frequently in *vegrandis*.....9.
9. Form moderately elongate, the antennæ of the male not or scarcely as long as the body, feebly serrate, the joints elongate-triangular, the tenth from two to three times as long as wide .....11.
Form very elongate in the male, the antennæ in this sex fully as long as the body, the joints filiform, the tenth fully four times as long as wide .....10.
10. Prothorax distinctly tumid on the median line just before the constriction. 17. **prolixus.**
Prothorax not distinctly tumid.....18. **quadrimaculatus.**
11. Eyes of male very large and prominent, separated on the front by a distance which is subequal to their vertical diameter.....12.
Eyes of male relatively smaller and separated on the front by a distance which distinctly exceeds their vertical diameter.....13.
12. Last ventral of male with the apical pubescent tubercle indistinct or feebly developed (Texas).....21. **texanus.**
Last ventral of male with well defined tuft of hairs surmounting a feeble apical elevation (California).....22. **interruptus.**
13. Last ventral of male with well developed apical tubercle; strial punctures coarser (Illinois, Arkansas).....23. **concurrens.**

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Last ventral of male without distinct apical tubercle; strial punctures finer ..... 14.

14. Size larger (2¾-3¼ mm.), eyes of male larger ..... 24. **fallax.**
Size smaller (1¾-2½ mm.), eyes of male smaller; the color darker, the base and apex of the elytra usually scarcely paler than the central area. 25. **vegrandis.**

15. Pale hairs nearly evenly but not densely distributed over the basal and apical parts of the elytra; interspaces about twice the width of the strial punctures ..... 27. **feminalis.**
Pale hairs of elytra in great part confined to narrow subbasal and subapical transverse bands; interspaces of the elytra not much wider than the strial punctures ..... 26. **paulonotatus.**

1. **P. brunneus** Duft.—Similar to *fur*, except in the following particulars: The color is more often rufotestaceous or pale brown in both sexes, but varies to dark brown in the male and piceous brown in the female. In the male the eyes are slightly more remote on the front, being separated by a distance which evidently exceeds the united length of the first and second antennal joints; the median line of the pronotal disk not or scarcely prominent behind; elytra entirely without recumbent scales; first joint of hind tarsi distinctly shorter than the three following united. In the female the elytra are a little more broadly oval, the erect hairs not so stout and distinctly longer, being about twice as long as the width of the interspaces; there are also very slightly longer hairs on alternate interspaces; the humeral region alone is clothed rather inconspicuously with yellowish recumbent subsquamiform hairs, but these are inconstant in development or else easily lost, for many specimens show scarcely a trace of them. In both sexes the head behind the antennæ is polished and quite strongly punctate, a character which separates *brunneus* from all its allies when the vestiture permits of its verification. In the male the hairs of the elytra are slightly longer and more bristling than in *fur*, but the difference is less marked than in the other sex.

Like *fur*, this is a nearly cosmopolitan species. It is known to me from the following localities in our fauna: New York, New Jersey, District of Columbia, North Carolina, Georgia, Ohio, Wisconsin, Indiana, Illinois, Missouri, Iowa, Kansas, New Mexico (Albuquerque.

2. **P. fur** Linn.—*Male.*—Color varying from rufotestaceous to pale brown; head alutaceous, not shining, vertex finely, sparsely punctulate, rather densely clothed with recumbent yellowish hair; eyes large, separated on the front by a distance distinctly greater than their own vertical diameter, and subequal to the united length of the first and second antennal joints; antennæ subequal in length to the entire body; first joint stoutest, a little arcuate; second much narrower and subquadrate; third to tenth elongate, parallel, differing little in length, the third about twice as long as wide, the tenth four times as long as wide; eleventh one-fourth longer than the tenth, slightly arcuate apically, the apex pointed. Thorax a little narrower than the head across the eyes, nearly as wide as long, sides parallel in front, strongly constricted posteriorly; surface sparsely granu-

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late, disk feebly tuberculate each side, median line projecting posteriorly in a cariniform process; a shallow groove behind the constriction along the posterior margin; hairs yellowish, condensed in tufts each side the median line and on the lateral tubercles. Elytra elongate, a little wider posteriorly, humeri prominent, striæ slightly impressed and with coarse stellate punctures; the interspaces slightly convex and a little wider than the punctures. The vestiture consists of short, rather fine, pointed, pale yellow hairs forming a single series on each stria and interspace, those of the striæ subrecumbent; those of the interspaces slightly curved and inclined at an angle of about thirty degrees; the hairs of both striæ and interspaces of about equal length and slightly longer than the width of the latter. Behind the humeri and at the apical third or fourth and extending onto the declivity are scattered whitish scales, these being from two to three times as long as wide, perfectly recumbent and not sufficiently numerous to render them very conspicuous. Prosternal process very narrow, mesosternal process wider, but scarcely one-fourth the width of the coxa; metasternum equal in length to the second and third ventral segments united, polished, with sparse linear punctures, also minutely punctulate; smoother posteriorly. Ventral segments polished and punctured like the metasternum; fourth segment half as long as the fifth, scarcely more than one-third as long as the third. Legs long and slender; femora clavate in apical half; tibiæ slightly bent; first joint of hind tarsi equal to the next three or very nearly so, relatively slightly shorter in the front and middle tarsi; second joint equal to the two following; last joint very slender and fully as long as the second.

Female.—Usually of a darker brown color than the male and differing otherwise as follows: Eyes smaller and less prominent, separated on the front by twice their vertical diameter; thoracic tufts denser, median line scarcely carinate before the constriction. Elytra elongate-oval, without humeri; interspaces flatter and a little wider; posthumeral and subapical patches of pale scales conspicuous. Legs and antennæ shorter and more robust; tenth joint of latter scarcely more than twice as long as wide; first joint of tarsi but little if any longer than the next two united. Length 2.6-3.6 mm.

Widely distributed in North America, Europe and Asia, occurring more or less commonly in old buildings. The following localities are represented in the material before me: Massachusetts, New York, Pennsylvania, Canada (Ontario), Ohio, Iowa, Illinois, Michigan, Alaska (Sitka), California (Pasadena).

3. **P. bicinctus** Sturm.

This species is intermediate in vestiture between *fur* and *villiger*, but is closest to the latter, from which it is distinguished by the lack of longer hairs on the alternate intervals of the elytra. In series the size is seen to be still a trifle less than in *villiger*, and the narrower humeri and arcuate sides of the elytra are still more pronounced. Length 2.2-3.2 mm.

Canada (Toronto), Massachusetts (Tyngsboro—Blanchard). Females of this species have not yet been recognized. According to

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Kiesenwetter they differ from the female of *fur* in the "longer elytra with longer unequal setæ, shorter, thicker antennæ and larger and differently clothed prothorax." The longer unequal elytral setæ suggest *villiger* and it is probable that females of this and *bicinctus* are very similar.

4. **P. villiger** Reit.—Very similar to *fur*, the differences being as follows: The size on the average is a trifle smaller; the eyes in the male a little smaller and the front correspondingly wider; median line of disk of pronotum not prominent at the constriction; elytra slightly narrower across the humeri, which are a little less prominent, the sides behind the humeri never faintly sinuate as in *fur*, but either straight or very slightly arcuate; strial punctures finer, the interspaces distinctly wider than the striæ; hairy vestiture in both sexes longer and more bristling, the alternate interspaces with much longer hairs alternating with the shorter ones, the long hairs twice as long as the width of the interspaces. In the male the whitish appressed scales are less diffused than in *fur*, being usually condensed both behind the humeri and posteriorly in two small spots centering on the fourth and eighth interspaces, with a few intermediately placed. In the female the whitish scales are as usual more conspicuous, and continuous from the fourth to the ninth interspaces anteriorly, but usually broken into two more or less distinct spots posteriorly. First joint of hind tarsus evidently shorter than the next three united. Length 2.5–3.5 mm.

Canada (Montreal), Connecticut, New York, Pennsylvania, Michigan (Grand Ledge and Adrian), Wisconsin (Bayfield), Nebraska (Lincoln), North Dakota, Washington State (one example referred with doubt).

5. **P. alternatus** n. sp.—Similar to *agnatus* and *cognatus*, but with much stouter antennæ and slightly more elongate elliptical elytra. The elytra are piceous, head and prothorax rufopiceous, antennæ, legs and lower surface reddish brown. Interspaces 1-3-5, etc., of the elytra bear short, equal, rather stout, somewhat inclined bristles, the remaining interspaces, except the marginal one, quite devoid of bristles, except three or four at the middle of the eighth. The anterior and posterior fasciæ are very conspicuous and consist of densely aggregated white scales, which are unusually broadly oval, being scarcely twice as long as wide. Length 2.75 mm.

This very distinct and beautiful species is represented by a single female specimen in the Hubbard and Schwarz collection, taken at Los Gatos, California.

6. **P. cælebs** n. sp.—Very similar to *fur*, but differs in its distinctly larger and more prominent eyes, slightly more prominent humeri and the minute setæ of the strial punctures. The eyes are larger and the front narrower than in any other species of the subgenus; the setæ of the elytral interspaces are very short and much inclined, almost precisely as in *fur*, and the elongate whitish scales are also distributed nearly as in that species; the color is uniform brown. Length 3.5–3.65 mm.

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Two males only have been seen, one from Los Gatos, California, the other from California without indication of precise locality. It is not impossible that this may be the male of *alternatus*, but I do not feel warranted in placing them together without definite knowledge of such relationship. In this and all the following species of the subgenus the setæ of the strial punctures are very minute, and it is worthy of note that all these species are peculiar to the Pacific Coast fauna. In all the species of the Atlantic district the strial setæ are well developed.

7. **P. verticalis** Lec. – *Female.*—Densely clothed with ochreous recumbent squamiform hairs. Head and prothorax of nearly equal width and about one-half the width of the elytra, the latter elongate, ventricose, each interspace with a row of short, erect, acuminate, pale bristles, and alternate interspaces with more widely spaced, longer, pale erect hairs. Length ".17 inch."

California (Ft. Tejon).

The unique female type in the LeConte collection, taken forty-five years ago, has never been duplicated, nor has a mate as yet been found for it. *Verticalis* resembles quite closely *gandolphei*, the only other species of the subgenus in our fauna which approaches it in density of vestiture, and I at first believed them to be identical. A recent comparison of females of the latter with the LeConte type shows that the vestiture in *gandolphei* is somewhat less dense and less evenly disposed, and the elytral bristles are more inclined and distinctly recurved; differences which are without much doubt specific in nature.

8. **P. gandolphei** Pic.—Form almost precisely as in *fur*. Eyes of male large and prominent, the front not wider than the combined length of the first two antennal joints; antennæ (♂) exceeding the entire length of the body; median line of pronotal disk not prominent behind. Elytra (♂) plentifully though not densely clothed throughout with coarse recumbent dirty yellow hairs, which are somewhat irregularly diffused, each interspace with a row of short inclined and recurved bristles; hairs of strial punctures very short and contained entirely within the punctures. In the female the elytral vestiture is denser, and the alternate interspaces bear long, fine, erect hairs. First joint of hind tarsus scarcely longer than the next two united. Length 3-3.5 mm.

California.

This species was described from Mariposa and appears to be quite local, and as yet rare in collections. Two examples in the collection of Mr. Fuchs are labelled as having been taken in the vicinity of San Francisco; all others seen by me were taken by Mr. Hop-

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ping at Kaweah, which is not very far from the original locality. The color is brown, darker in the female, with the middle of the elytra in the male sometimes darker. The species may be at once distinguished from all others, except *verticalis*, by the relatively dense sordid yellow vestiture.

9. **P. agnatus** n. sp.—Form of *fur;* rufous, except the elytra, which in the male incline to piceous, with the suture paler, but in the female are entirely piceous. In the male the eyes are large and separated on the front by a distance which is scarcely equal to the combined length of the first and second antennal joints. Prothorax coarsely closely granulate, the median line not prominent before the constriction, the hairs of the disk not conspicuously dense on the lateral tubercles or on either side the median line. Punctures of elytral striæ moderate, closely placed, each bearing a minute appressed hair, the interspaces (♂) scarcely wider than the striæ, each with a row of rather fine bristles, which are about twice as long as the width of the interspaces, moderately inclined and very feebly recurved. Throughout the surface are scattered whitish appressed squamiform hairs which are condensed in a narrow oblique fascia at the apical fourth, and sometimes in a similar though ill-defined transverse subbasal one. In the female the alternate interspaces of the elytra bear exceedingly long, fine, erect hairs, these nearly or quite equalling in length the distance from the suture to the fourth stria, the shorter hairs being less than half as long. The white squamiform hairs are less widely scattered, being nearly all condensed in conspicuous anterior and posterior fasciæ, which, as usual, do not reach the suture. First joint of hind tarsi subequal to the next two united. Length 2–3 mm.

Southern California, Los Angeles and San Diego Counties.

10. **P. cognatus** n. sp.

Exceedingly closely allied to *agnatus* and possibly not distinct. The most conspicuous difference is in the length of the erect hairs of the elytra in the female, both the shorter and longer hairs being nearly or quite one-half longer in *agnatus* than in the present species. As already remarked, the longer hairs in *agnatus* are nearly as long as the distance from the suture to the fourth stria; in *cognatus* they would not attain the third stria. The males of the two forms are more difficult to separate than the females. In *agnatus* the antennæ are rather more slender, the tenth joint about four times as long as wide and with apex less than twice as wide as base: in *cognatus* the tenth joint is about three times as long as wide and the apex twice as wide as the base. These, it should be remarked, are the prevailing conditions, though some slight variation is perceptible. In *cognatus* the thighs appear to be infuscate in fully colored specimens, but never so in *agnatus*.

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All specimens seen, except one from Oregon (collected by Koebele), are from the Middle California Coast Region (San Francisco and Alameda Counties, and Los Gatos), where it appears to be as common as *agnatus* is in Southern California.

11. **P. longivestis** n. sp.—Brown, moderately elongate. Head densely, finely granulate, pilose; eyes not strongly convex and scarcely more prominent than the sides of the prothorax; front twice as wide as the vertical diameter of the eye; antennæ four-fifths as long as the body, joints 3-10 subequal in length, about twice as long as wide, each a little widened apically; eleventh one-third longer than the tenth. Prothorax of the usual form, closely granulate and densely confusedly pilose; the hairs of unequal lengths, varying from whitish to pale brown; at the anterior margin numerous, very long, fine, posteriorly curved hairs. Elytra oblong, humeri small but distinct, sides feebly arcuate and nearly parallel in basal two-thirds; strial punctures quite coarse, the interspaces subequal in width to the striæ; setæ of the strial punctures straight, about twice as long as the interstrial width, and inclined at an angle of 45°; each interspace with a row of setæ of equal length to those of the striæ, but more erect, these alternating on alternate intervals, with excessively long, fine, erect curved hairs. Throughout the surface, except the middle portion of each elytron, are scattered subrecumbent, whitish, subsquamiform hairs, but these are mainly condensed in the humeral region and in a feebly defined interrupted transverse fascia at the apical fourth. Sculpture and vestiture beneath as usual; fourth ventral segment about half the length of the third and two-thirds as long as the fifth. Legs moderate; first joint of hind tarsus not longer than the next two united. Length 2¼ mm.

Described from a single example, probably a female, taken at Ft. Yuma, Arizona, by Mr. Hubbard, and now in the National Museum collection.

12. **P. californicus** Pic.—Oblong, moderately robust, blackish brown; head, prothorax, legs and antennæ dark rufous. Antennæ nearly as long as the body, the outer joints about four times as long as wide in the male; shorter, stouter, the outer joints scarcely more than twice as long as wide in the female. Eyes moderate, separated on the front by about one and two-thirds times their vertical diameter in the male, a little smaller in the female, the front relatively wider. Head behind the antennæ densely clothed with small whitish scales and short intermixed fulvous setæ. Prothorax densely granulate, moderately constricted, tuberculate at sides of the disk, rather sparsely clothed with short inconspicuous hairs, which are much inclined, except on the lateral tubercles. Elytra parallel, strial punctures strong, intervals a little wider than the striæ; setæ of strial punctures minute, those of the intervals blackish, very short and almost recumbent; posthumeral and subapical transverse patches of white scales very conspicuous; scutellum densely clothed with pale hairs. Beneath clothed with recumbent, coarse, cinereous or fulvo-cinereous hair. Legs rather stout, more slender in the male. Length 4-5 mm.

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Known to me from Colorado, Utah, Nevada, the Middle Sierras of California and Vancouver Island (Taylor).

Our largest species and differing from all others in the very short almost recumbent elytral setæ. The European analogue of this species is *quadrisignatus* Mén, to which indeed *californicus* is exceedingly closely allied.

13. **P. strangulatus** n. sp.—Oblong, moderately elongate, black, legs and antennæ rufous; in one example the humeri and a small subapical spot obscurely rufescent. Eyes moderate, separated by a little less than twice their vertical diameter. Antennæ not quite as long as the body, outer joints about two and one-half times as long as wide. Head and prothorax rather coarsely and closely granulate, the latter not tuberculate on the disk, abruptly strongly strangulated posteriorly, the bottom of the constriction smooth and impunctate, the sides overhanging, especially laterally, where they are nearly in contact. Elytra parallel, strial punctures not stellate, elongate, distinctly oblique toward the base; interspaces three times as wide as the striæ at the middle of the disk. Vestiture of the upper surface throughout consisting of short, rather fine, luteous, much inclined hairs, those of the elytral interspaces not or but slightly longer than those of the punctures. Metasternum with coarse, closely placed shallow punctures; smoother at middle and posteriorly. Length 2.3-3.3 mm.

Florida (Miami and Key Largo); collected by Mr. Beyer.

A remarkable species, possessing in its deep smooth posterior thoracic channel and oblique elytral punctures, characters which do not appear elsewhere in the genus. The sexual differences are probably small.

14. **P. falli** Pic.—Black; head, prothorax, sterna, first ventral segment, appendages, and rarely the base of the elytra, rufous. Vestiture fuscous on the elytra, brown or yellowish brown on the rufous parts of the body, the scutellum thickly clothed with pale hairs. Head closely granulate and sparsely, shortly pilose; eyes not very prominent; distant on the front by about twice their diameter. Antennæ scarcely as long as the body, moderately stout, the joints feebly obconical, from two to two and one-half times as long as wide. Prothorax rather sparsely granulate, feebly tuberculate at sides, and sparsely pilose. Elytra parallel, nearly twice as wide as the prothorax; interspaces a little wider than the striæ; setæ of the strial punctures scarcely longer than the width of the interspaces, much inclined; interstrial setæ about twice as long and more erect; recumbent hairs or scales entirely wanting. Metasternum densely punctate in front and at sides, the punctures rather coarse and nearly circular. Length 2.3-3 mm.

District of Columbia, Ohio, Kentucky, Texas.

The color, vestiture and the punctuation of the metasternum render this species one of the most easily recognized in our fauna. It does not seem to be common.

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15. **P. bimaculatus** Melsh.—Oblong, parallel, robust; antennæ, legs and lower surface rufous; above black or piceous, the humeri and apical third or fourth of the elytra rufous. Antennæ shorter than the length of the body, second joint two-thirds the length of the third, the outer joints about twice as long as wide in the male; second joint subequal to the third, the outer ones scarcely one-half longer than wide in the female; joints obconical in both sexes. Eyes moderate, not more prominent than the sides of the prothorax; front about twice as wide as their vertical diameter in the female, a little narrower in the male. Hairs of the upper surface generally dark in color, the elytral setæ moderately stout, the longer ones of the interspaces about equal to the distance from the suture to the second stria; the strial setæ shorter and more inclined, as usual. On each elytron is a conspicuous, somewhat irregular posthumeral fascia of dense white, appressed, squamiform hairs, and a similar narrower fascia bordering the apical rufous area; there is also a small dot of white hair on the fourth interspace, close to and just behind the inner end of the anterior fascia, and another on the third interspace, half way between this and the posterior fascia. Beneath moderately pubescent, the metasternum coarsely, sparsely punctate. Legs rather short, the first joint of the hind tarsi barely equal to the next two united. Length 2-2.8 mm.

I have seen specimens from New York, Pennsylvania, Michigan (Ann Arbor), Missouri, Kansas (Salina), Florida (Crescent City). Apparently a rare species in the northern States, the larger number of specimens seen coming from Texas.

Frontalis Melsh. is quite surely the male of this species, and M. Pic has recently described it again under the name *rubroapicatus*. The remarkably stout form which is, however, not in the least ventricose, the peculiar coloration and the conspicuous white fasciæ at once distinguish this from all other species.

16. **P. tumidus** n. sp.—Oblong, piceous; legs and antennæ rufous. Head granulate and with fuscous hairs; eyes very large and prominent; front a little narrower than the vertical diameter of the eye. Antennæ rather slender, nearly as long as the body, at least in the male; outer joints nearly four times as long as wide, each slightly increasing in width from base to apex. Prothorax much narrower than the width across the eyes, disk strongly compressed and elevated in front, moderately strongly constricted behind, surface granulate and rather densely clothed with long erect hair, which is predominantly fuscous in color at the middle, becoming paler at sides. Elytra parallel, about twice as wide as the prothorax; strial punctures moderate, becoming finer at apex; interspaces a little wider than the striæ on the disk, each with alternating, shorter and longer erect setæ, which are scarcely at all recurved, and vary in color from fuscous to ochraceous, the darker color prevailing on the disk; setæ of strial punctures shorter and less erect. The longer hairs of the interspaces are about equal in length to the distance from the suture to the third stria, the shorter ones two-thirds as long. The discal portion of the base, the sutural region, and the lateral margin

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are clothed with pale yellowish recumbent squamiform hairs; there is also a small rounded spot of dense white appressed hairs on the fourth interspace before the middle, a smaller one just behind the middle and nearer the suture, and a little posterior to this a transverse spot on intervals 5–8. Metasternum and abdomen sparsely, finely punctate; abdomen sparsely pubescent, metasternum, especially the side pieces, more thickly so. Length 2.8 mm.

Brownsville, Texas.

I have seen only two males of this pretty species. It is a somewhat aberrant member of the *interruptus* type, distinguishable at once by its strongly compresso-carinate prothorax.

17. **P. prolixus** n. sp.—Similar to *quadrimaculatus* in all respects, except the following: The eyes are even slightly larger and more prominent, the prothorax distinctly prominent at middle before the constriction, the dark area of the elytra paler and much less sharply defined. Length 3.5 mm.

Texas. Two males, one of them collected by Belfrage.

18. **P. quadrimaculatus** Melsh.—*Male.* Elongate, nearly parallel; head, thorax and lower surface rufopiceous, antennæ and legs pale rufous, elytra rufous, each with a large black patch occupying the middle half, attaining the side margin but not the suture, its posterior outline transverse, its anterior margin extending obliquely forward and outward to a point just behind the humerus. Eyes very large and much more prominent than the sides of the prothorax, the front between them very little wider than their vertical diameter. Antennæ subequal in length to the body, slender, the individual joints filiform, the outer ones fully four times as long as wide. Prothorax granulate, confusedly hirsute, the hairs varying in color from luteous to brown; disk not prominent at middle before the constriction. Elytra more than twice as wide as the prothorax and about four times as long; interspaces wider than the striæ, each with a row of setæ varying but slightly in length, the longer ones about equal to the distance from the suture to the second stria, inclined about 45 degrees; setæ of strial punctures a little shorter and more inclined. The rufous areas of the elytra are clothed with recumbent, yellowish, squamiform hairs, these being condensed and paler in color along the margins of the black area, elsewhere rather sparse. Metasternum as long as the second and third ventral segments united. Legs long and slender; first joint of hind tarsus nearly as long as the three following. Length 3-3¼ mm.

Massachusetts, Pennsylvania, District of Columbia.

I have examined at Cambridge what is, in all probability, Melsheimer's type. It is a male and precisely similar to a male from the District of Columbia now before me. The species seems to be singularly rare in collections, and I find in the very large material sent me for study only this single male (Nat. Mus. collection) and a female which I place with it, taken by Mr. Blanchard at Tyngsboro, Mass., more than thirty years ago, and for which he has not since found a mate. This female differs from the male described

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above in being of less elongate form, in its smaller eyes, front nearly twice as wide as the vertical diameter of the eye, shorter subserrate antennæ, the outer joints scarcely more than twice as long as wide, the basal joint of hind tarsi not distinctly longer than the next two, elytral setæ longer.

19. **P. hystrix** n. sp.—Of the *interruptus* type, but conspicuous in this group for its exceedingly long abundant hispid vestiture. The paler parts of the elytra are more or less dark rufopiceous, and so contrast slightly with the central black area. The basal, apical and sutural regions are clothed with subrecumbent, recurved, yellowish white, squamiform hairs, these as usual being paler and denser along the margins of the central area, and on the oblique discal dash, which is here quite conspicuous. These recumbent hairs are also more noticeably scattered over the black area than usual. The eyes are moderately prominent, separated in the male by rather less than one and one-half times their vertical diameter, and are a little smaller and more distant in the female. The antennæ are of the usual form, the tenth joint a little more than twice as long as wide in the male, and about twice as long as wide in the female. The elytral interspaces are scarcely wider than the very coarse strial punctures, the interstrial setæ strongly bristling, of two lengths, the longer ones equal to the distance from the suture to the third stria, the shorter ones from one-half to two-thirds as long; the strial setæ are still shorter and more inclined. The last ventral is not tuberculate in the male. Length 2.6–2.8 mm.

Brownsville, Texas.

20. **P. eximius** n. sp.—This is our largest and stoutest species of the *interruptus* type. The color is usually dark throughout, the base, apex and suture of the elytra being seldom more than obscurely rufescent. The vestiture is denser than in any other species of the group, and the erect hairs are nearly as long as in *hystrix*. The eyes and antennæ vary but little in the sexes, the former being separated by fully one and one-half times their vertical diameter; the tenth antennal joint from two to two and one-half times as long as wide. Base, apex and suture of elytra quite densely and almost uniformly clothed with yellowish white recumbent hairs, the dark median area conspicuously suffused with the same; median discal dash limited to a dot on the third interspace. Strial punctures much less coarse than in *hystrix*, the interspaces distinctly wider than the striæ. The anterior margin of the central black area is more transverse than usual, the basal densely pubescent area being in consequence but slightly wider at the suture than at the humeri. Last ventral segment without apical tubercle in the male. Length 3.2–3.7 mm.

Southern California (San Diego), Lower California (San José del Cabo). With the typical specimens from the above localities, I have placed others from Texas, South Carolina and Florida, which are too close to the types to warrant their separation with the very few specimens at hand.

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21. **P. texanus** Pic.

The type of this species, which M. Pic has kindly sent me for examination is a female intermediate in appearance between *eximius* and *interruptus* or *concurrens*. In its somewhat robust form and dark color it resembles *eximius*, or more strictly the eastern examples which I have referred to that species, but it is smaller, with rather shorter erect hairs, and with the short oblique discal dash extending onto the fourth interspace, I have associated under this name numerous specimens from various localities in Texas, which exhibit quite a little variation in minor details; in all these the males lack the apical ventral tubercle. Specimens from Brownsville, Texas, have the eyes excessively large, the front scarcely equal in width to their vertical diameter, and the strial punctures somewhat coarser; these possibly indicate a distinct closely allied species. Good series of both sexes from many localities must be collected before we can determine specific limits in this difficult group with any degree of certainty.

Texas, many localities; Georgia, St. Catherine's Island.

22. **P. interruptus** Lec.—Moderately elongate, parallel, reddish brown, each elytron with a large central black area extending from the side margin to the second interspace, its posterior limit transverse, its anterior outline quite strongly oblique, extending from just behind the humerus to a point on the suture about one-third from the base. Eyes strongly globose, much more prominent than the sides of the prothorax, the front between them subequal in width to their vertical diameter, or to the united lengths of the second and third antennal joints. Antennæ nearly as long as the entire body, subserrate, the tenth joint in the male three times as long as wide. Prothorax not very closely granulate, not distinctly tuberculate, strongly constricted posteriorly, confusedly hirsute with yellowish and brownish hairs, the latter predominating on the disk, the former at the sides. Elytra twice as wide as the prothorax and fully three times as long, humeri prominent, sides parallel, very slightly wider at apical third; strial punctures moderate, finer posteriorly, interspaces evidently wider than the striæ, each with a row of suberect bristles varying but little in length, the longest about equaling the distance from the suture to the second stria; setæ of the strial punctures shorter and more inclined; the subtriangular basal area, suture and apical third or fourth clothed sparsely with recumbent hairs, pale yellow, varying to whitish along the anterior and posterior margins of the black fascia, where they are condensed into fairly conspicuous bands; an oblique discal dash of similar hairs extending forward from the second interspace across the third and fourth, the surface beneath this dash usually of paler color like the suture. Metasternum and abdomen polished, very finely, sparsely punctulate, with scattered coarser punctures; finely, not densely pubescent. Metasternum scarcely as long as the second and third ventral segments united; the fourth segment fully two-thirds as long as the third and a little shorter than the fifth; the

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fifth with a small pubescent apical tubercle in the male. Legs moderately slender, first tarsal joint subequal to the two following on all the feet. Length 2.5 3.2 mm.

California (San Francisco, Santa Cruz Mountains, Contra Costa). One example from Miami, in the Mariposa region, is referred to here with some doubt.

This species appears to have a limited range. It is very similar to *fallax*, which is much more widely diffused through the State, and is to be separated by its larger eyes and distinct apical ventral tubercle in the male.

23. **P. concurrens** n. sp.—Closely similar to *interruptus*, from which it differs in its smaller eyes (♀), coarser strial punctures and the shorter antennal joints, the tenth being scarcely more than two and one-half times as long as wide. The eyes (♂) are separated on the front by a distance which is nearly one and one-third times their vertical diameter, and distinctly more than the combined lengths of the second and third antennal joints. Length 2.5–2.8 mm.

Northern Illinois, Arkansas (Stromberg).

24. **P. fallax** n. sp.—Differs from *interruptus* in the smaller eyes of the male, these being separated on the front by a distance which is evidently greater (about one and one-fourth times) than their vertical diameter, and which exceeds the united length of the second and third antennal joints; and in the absence of a distinct apical ventral tubercle in the same sex. While the above differences, which are those given in the table, are the most conspicuous and reliable ones, there are some others which are evident on careful comparison. The head and prothorax seem relatively smaller in *fallax*, and I think this is not due wholly to the smaller eyes; the antennæ are a little more slender, and the inner margin of the black area is more oblique, receding from the suture anteriorly so as to leave three or even four interspaces rufous, while in *interruptus* the inner margin of the black area is more nearly parallel with the suture, seldom leaving more than two interspaces rufous in front. This narrowing of the black area anteriorly in *fallax* results in the short oblique median dash of pale hairs forming a nearly continuous line with that bordering the black area in front, while in *interruptus* the oblique dash is nearly parallel to the anterior fascia bordering the black spot. These differences are easily obscured in specimens in which the vestiture is not perfectly preserved.

The species ranges from Southern California to Oregon, both in and to the west of the Sierras. Those from the first named region are typical; the Oregon specimens are slightly different, but I cannot find good grounds for separating them.

25. **V. vegrandis** n. sp.--Of the *interruptus* type but much smaller; pale areas rarely well defined, the suture usually and the base and apex of the elytra frequently more or less completely suffused with the darker color of the central area. Eyes of male more prominent than the sides of the prothorax, but dis-

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tinctly smaller than in related species, the front being nearly equal in width to twice their vertical diameter, and about equal to the third and fourth antennal joints united in the male. Length 1¾-2¼ mm.

Southern California (Kaweah, Pomona, Pasadena); Arizona (Hot Springs and Williams).

The smallest species of the group, and nearly always at once recognizable by its dark color. The Arizona specimens are not quite typical, but are best placed here for the present.

26. **P. paulonotatus** Pic.—Moderately elongate, parallel, uniformly reddish brown throughout, or with the median parts of the elytra slightly darker. Antennæ (♂) a little shorter than the length of the body, subserrate, tenth joint slightly less than three times as long as wide. Eyes distinctly more prominent than the sides of the prothorax, the front nearly one-half wider than their vertical diameter and very obviously wider than the combined lengths of the second and third joints of the antennæ. Head and prothorax granulate and hirsute as usual, the hairs yellowish. Elytra moderately strongly punctate-striate, the intervals a little wider than the punctures, each with a series of yellowish or brownish yellow erect hairs, not varying much in length, the longest nearly equal in length to the distance from the suture to the middle of the third interval; strial setæ somewhat shorter and more inclined; at basal and apical fourths a narrow transverse fascia of white recumbent hairs, the anterior fascia reaching nearly to the suture, the posterior one more lateral; a short transverse subsutural spot behind the middle. Metasternum and abdomen polished, the former with a few coarse, very shallow punctures at base and side, the latter with fine and still sparser similar punctures. Length 2.2-3 mm.

Texas (Belfrage), Lower California (Sierra El Taste and San José del Cabo). The type which M. Pic has very kindly sent me for examination is identical with the Belfrage specimens in the National Museum, and is probably from the same source. The Lower Calfornia specimens have the erect hairs of the elytral intervals relatively a little longer and the transverse fasciæ better developed, but I think they are identical. All specimens seen are males. A female from Pueblo, Colorado, in the National Museum collection has much longer hairy vestiture and is less parallel in form; it should perhaps be referred here.

27. **P. feminalis** n. sp.—Uniformly pale red-brown; erect hairs varying in color from yellowish white to pale brown, the recumbent hairs yellowish white. Head granulate and pilose; eyes moderate, very little larger in the male, separated on the front by about one and one-half times their vertical diameter; antennæ as long as the body in the male, outer joints fully three times as long as wide; somewhat shorter than the body in the female, the joints a little less elongate. Prothorax granulose and confusedly pilose, with longer curved hairs at the front margin; disk faintly tuberculate at sides, not prominent at the con-

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striction. Elytra oblong, slightly wider behind, sides straight from the humeri to the apical third in the male, broadly arcuate in the female; strial punctures small, the interspaces fully twice as wide as the punctures; setæ of the strial punctures scarcely longer than the width of the interspaces, straight, moderately inclined; those of the interspaces about equal in length, but somewhat more erect, and alternating on every interspace with setæ of about double their length; entire base in front of a line running obliquely backward from just behind the humerus to the suture, rather thickly clothed with recumbent yellowish white hair; apical third similarly but more sparsely clothed, and with intermediate scattered hairs, especially near the suture. Metasternum distinctly longer than the second ventral segment, the fourth ventral not much shorter than the fifth and more than half as long as the third. First joint of hind tarsus barely as long as the two following united. Length 2½–2¾ mm.

Arizona (Tucson and Hot Springs); collected by Barber and Schwarz, and Wickham.

ANOBIINÆ.

The insects of this subfamily are for the most part of a slightly depressed cylindrical form, but vary to broadly oval or nearly globular. The mentum is trapezoidal or more rarely subtriangular; labrum short and transverse; eyes rounded and usually prominent; antennæ inserted just before the eyes, of variable form but very often with the last three joints much elongated, especially in the male. Head deflexed and usually nearly or quite invisible from above, the prothorax more or less excavated beneath for its reception, except in the first two tribes and in the Ptilinini. The prothorax is usually margined at sides; scutellum distinct; body winged. Coxæ either approximate or separated, the anterior usually conical and prominent, the posterior, except in the Hedobiini, more or less distinctly sulcate for the reception of the femora. Legs moderate or short, femora not distinctly clavate, except in *Ptinodes;* tarsi sometimes slender, sometimes dilated; joints 1–4 decreasing in length; claws divaricate, simple, except in *Trichodesma.*

This subfamily is divisible into six tribes as follows:

Front not margined, nor with impressed line over the base of the antennæ; hind coxæ not grooved for the reception of the thighs; prothorax not margined at sides..... .....HEDOBIINI.

Front margined more or less acutely or with an impressed line above the antennæ; hind coxæ more or less distinctly sulcate; prothorax margined at sides, except very rarely.....2.

2. Antennæ of male strongly flabellate; exterior margin of front tibiæ prolonged at tip in a horizontal dentiform process, the margin above the tooth finely serrulate or denticulate; form of body and sculpture varying in the sexes .....6.

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Antennæ of male never flabellate, at most pectinate; front tibiæ not toothed and denticulate externally; form and sculpture not obviously different in the sexes.....3.

3. Head in repose received upon the under surface of the prothorax.....4.
Head very strongly deflexed and retracted, the mandibles nearly or quite reaching the metasternum.....5.

4. Prothorax not excavated beneath, the head free.....DRYOPHILINI.
Prothorax excavated beneath for the reception of the head.....ANOBIINI.

5. Trunk not grooved for the reception of the middle and hind legs; anterior coxæ contiguous and depressed; head impressed or excavated beneath for the reception of the antennæ; metasternum not lobed in front; form oblong or elongate oval.....XYLETININI.
Four posterior legs received in appropriate excavations of the metasternum and first ventral segment; metasternum frequently lobed in front; form varying from elongate-oval to globose.....DORCATOMINI.

6. Prothorax not distinctly excavated beneath, disk in the female acutely asperate anteriorly; form cylindrical.....PTILININI.

With the exception of the introduction of the Hedobiini, reasons for which have already been given, the removal of *Petalium*, *Theca* and *Eupactus* to the Dorcatomini, and some minor changes due largely to the amplification necessitated by the larger material studied, the above division into tribes and the sequence of genera which follows is not very different from that proposed by LeConte.

Following this scheme of arrangement, the genera form a nearly orderly sequence from those in which the head is but little deflexed and the members slightly contractile, to those in which the strongly deflexed head completely shuts in the pro- and mesosterna, and in which the antennæ and legs are received in appropriate excavations. I have used the words "nearly orderly" above because of the genera *Petalium*, *Theca* and *Eupactus*, which it seems quite impossible to place satisfactorily in any linear arrangement. For reasons stated under the Dorcatomini it seems more appropriate to associate them with that tribe than with the Anobiini as was done by LeConte.

HEDOBIINI.

The principal characteristics of this tribe have already been set forth, and further details will be found in the generic diagnoses which follow. Our genera are only two in number and easily separable by the form of the antennæ.

Antennæ filiform, similar in the sexes.....**Hedobia.**
Antennæ pectinate in the male, serrate in the female.....**Eucrada.**

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Reference should be made at this point to a small series of specimens labelled "*Hedobia* sp." in the National Museum collection. These specimens were found emerging from Japanese bamboo in the Museum many years ago and would not require mention but for the fact that a single specimen has recently been taken by Mr. F. C. Pratt at St. Elmo, Virginia, a few miles below Washington. According to Mr. Schwarz, who has investigated the matter, the beetle is undescribed, but I am unwilling to give it a name and place on our lists until further experience shows that it has really established itself with us. The reference of this insect to the Hedobiini is apparently correct, but it is not an *Hedobia*, and doubtless a new genus will have to be erected for it. From *Hedobia* it differs among other characters of lesser note in its pectinate antennæ (at least in the male), its margined thorax and vertical exposed pygidium. The last named character is truly a remarkable one and does not occur in any other Ptinide genus known to me. It may, perhaps, be considered of sufficient importance to exclude the species from the Hedobiini, but if not, the presence or absence of the prothoracic side margin can no longer be held to be of tribal value.

HEDOBIA Latreille.

Mentum triangular, labrum very short and transverse, scarcely sinuate in front; palpi short, basal joint smallest, not at all curved; second and third joints obconic and a little elongate; terminal joint longer, widest beyond the middle, compressed, the apex truncate when viewed on the compressed side. Antennæ inserted at the sides of the front before the eyes, filiform, moderately compressed; basal joint oval, stout, a little longer than wide; second joint shorter; 3–10 subequal, subtriangular, the third as long as the first, the outer ones slightly longer, the eleventh noticeably longer than the tenth. Head deflexed; eyes globose, prominent, but not large; front not margined over the base of the antennæ. Prothorax narrower than the elytra, without side margin, not excavate beneath. Elytra parallel in both sexes, confusedly punctate. Prosternum without intercoxal process; mesosternum short, oblique, the coxæ narrowly separated; metasternum as long as the first two ventral segments; hind coxæ not sulcate, narrowly separated, the intercoxal process acute. Ventral segments subequal, the third and fourth just visibly shorter; the first not narrowed appreciably by the coxæ. Legs rather short

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and stout, femora not clavate; tibiæ and tarsi equal in length, the former straight, gradually widened to apex, with two small spurs; the latter broad and densely pubescent beneath, first joint equal to the two following united; third and fourth short, the latter distinctly transverse and feebly emarginate; last joint triangular, as wide as long; claws strongly divaricate.

1. **H. granosa** Lec.—Oblong, moderately elongate, piceous, or piceotestaceous, elytra with three somewhat diffuse and irregular transverse dark fasciæ; clothed throughout with short recumbent cinereous hair which is not very dense, and becomes darker in color on the elytral fasciæ. Antennæ (♂) nearly as long as the body, the tenth joint twice as long as wide; evidently shorter in the ♀, the tenth joint one-half longer than wide. Head rather coarsely granulose, with smooth median line, which is somewhat variable in width; front twice as wide as the vertical diameter of the eye. Prothorax nearly as wide as long, a little constricted behind the apex, slightly wider posteriorly, where it equals the width of the head across the eyes; disk elevated at middle and compresso-carinate posteriorly; surface moderately closely granulose. Elytra about two-thirds wider than the prothorax, parallel, confusedly granulate-punctate. with numerous evenly distributed, smooth, flattened tubercles; margin finely serrulate posteriorly. Beneath polished and rather closely punctate, sparsely pubescent; fifth ventral truncate at apex, and in the female with a transverse, deep, polished, apical fovea. Tibiæ granulate along the exterior margin, the outer apical angle slightly prominent. Length 3–4½ mm.

This species inhabits the California coast region from San Francisco to Los Angeles but is much more common in the northern part of its range. According to Rivers it has been found breeding in dead branches of the California laurel (*Umbellularia californica*) near San Francisco. In Southern California it occurs on live oak in the dead branches of which it probably breeds, as does its congener *H. angulata*.

2. **H. angulata** n. sp.—Similar to *granosa*, except as follows: The form is a trifle more slender; the elytra are better described as piceous, with two sharply contrasting, irregularly angulate, pale fasciæ; smooth tubercles entirely wanting; head without median smooth space.

Southern California. Not rare at Pomona and Pasadena, where I have beaten it from the foliage and from dead limbs of live oak, in which it doubtless breeds. It will probably be found mixed with *granosa* in many collections.

EUCRADA LeConte.

This genus possesses in the main the same characters as *Hedobia*, but differs conspicuously in the antennæ, which are pectinate in the male and quite strongly serrate in the female, and are inserted

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higher on the front near the inner margin of the eye. The last palpal joint is nearly parallel, widest at about the middle; the elytra are somewhat irregularly seriate-punctate; middle coxæ a little less narrowly separated; fifth ventral segment longer; tibial spurs differing in the sexes.

We have but a single species, which is so well known as to need only a brief description.

1. **E. humeralis** Lec.—Oblong, moderately elongate, dull black; prothorax except basal and apical margins, and the humeral umbone reddish yellow. Head granulate and rather densely clothed with fulvo-cinereous hair. Prothorax with fulvous hair, surface granulate, disk obtusely elevated. Elytra alutaceous, closely rather coarsely striate-punctate, the rows somewhat irregular, especially toward the suture; intervals narrow, feebly convex, pubescent, the humeral one a little more conspicuously cinereous pubescent, giving the appearance of a narrow vitta. Length 4–5½ mm.

This pretty species occurs in the North Atlantic States and Canada extending west to Michigan and Kentucky. The statement in the "Classification" that the tibiæ have but a single spur is erroneous. There are two spurs in both sexes, and in the female these are of the usual size; in the male the inner one is much enlarged and the smaller outer one being close to it may easily be overlooked.

Dryophilini.

The members of this tribe agree in having the head only moderately deflexed, the prothorax not excavated beneath for its reception, the legs not received in cavities, the hind coxæ rather feebly sulcate. The antennæ are 11-jointed, except in two species of *Ernobius*, the three outer joints more or less dilated and elongated in all our genera. They are not received between the front coxæ, which are either contiguous or narrowly separated. The seven genera represented in our fauna vary much in appearance as well as in details of structure. They separate as follows:

Front coxæ only moderately prominent, separated by a distinct prosternal process.
  Tarsi broad, prosternum short before the coxæ.
    Intermediate joints of antennæ subequal..... .....**Xestobium.**
    Intermediate joints of antennæ unequal, the fifth and seventh wider and more elongate..... **Utobium.**
  Tarsi relatively narrow.
    Prothorax margined at sides.
      Antennæ 10-jointed, prosternum very short before the coxæ, mesosternum vertical between the coxæ .....**Microzogus.**

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Antennæ 11-jointed, prosternum long before the coxæ, mesosternum oblique ..... **Ozognathus.**
Prothorax not margined at sides ..... **Xarifa.**
Front coxæ conical, very prominent and contiguous.
Fourth tarsal joint short, emarginate; antennal stem not serrate; prothorax, except very rarely, with sharply defined side margin... **Ernobius.**
Fourth tarsal joint elongate, not emarginate; antennal stem serrate; prothorax not margined at sides ..... **Paralobium.**

Of the above genera only *Ernobius* and *Xestobium* occur in Europe, where, owing to a different basis for classification they are included in the Anobiini. The genera *Episernus* Thom. and *Ochina* Steph. represented in Europe by a moderate number of species would also fall in the Dryophilini as above constituted; in fact the former genus is doubtfully distinct from *Ernobius*, being distinguished only by the 10-jointed antennæ and non margined sides of the prothorax, characters which are possessed wholly or in part by two of our species which I have not thought best to separate generically from *Ernobius*. *Ochina* is quite anomalous in its feebly serrate antennæ with the outer joints not elongate, and therefore placed by European systematists in the Xyletinini. It is one of those genera with composite affinities and for this reason not easy to place in line. The front coxæ are contiguous and the tarsi rather slender, with the fourth joint emarginate. I should therefore place it after *Ernobius*.

Two genera only constitute the Dryophilini in the European Catalogue, viz. *Dryophilus* and *Priobium*, both of which are unrepresented in America. They differ from all our genera in their regularly punctate-striate elytra. *Priobium*, because of its distant front and middle coxæ should stand at the head of the tribe, where also one would naturally place it because of its resemblance to the preceding tribe in its relatively narrow unmargined prothorax. In *Dryophilus* the thorax is also without side margin, and this together with the more frontal insertion of the antennæ point toward the Hedobiini; the coxæ, however, are contiguous and the general fascies is much like some of our species of *Ernobius*.

XESTOBIUM Motschulsky.

The species of this genus are oblong, parallel, moderately stout and of rather more than average size. The mentum is transversely trapezoidal, labrum short and truncate or broadly rounded ante-

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riorly; labial and maxillary palpi similar, their terminal joints largest, nearly twice as long as wide, fusiform, pointed. Antennæ 11-jointed, joints 9–11 longer. Eyes moderately prominent, but not large. Prothorax nearly or quite as wide as the elytra, sides margined. Elytra parallel, confusedly punctate. Front coxæ moderately prominent, distinctly but narrowly separated; prosternum short before them, the intercoxal process becoming wider and ascending posteriorly. Middle coxæ moderately separated; hind coxæ sulcate, the coxal plate suddenly and strongly dilated internally. Ventral segments 1 and 2 equal, 3 and 4 equal and slightly shorter, 5 longest. Legs short and thick, the tarsi wide and densely pubescent beneath.

Four species have been described from our fauna, one of which, *elegans*, is so aberrant in several points of structure, notably in antennal formation, that I have thought best to make it the type of a new genus, a procedure indeed, which its author predicted would be found necessary in the event of a revirsion of the Anobiini.

Our species are thus separated:

Elytra distinctly granulato-punctate, side margin of prothorax more broadly flattened.....1. **rufovillosum.**
Elytra more finely punctate, the granules very feebly developed.....2. **affine.**

A careful examination of the type of *squalidum* shows that it is only a small specimen of *rufovillosum*, the antennal differences given by LeConte for the separation of the two being almost entirely imaginary.

1. **X. rufovillosum** DeG.—Form rather stout, parallel, two and one-half times as long as wide; dark brown, tessellate with short fuscous and fulvous hairs, the darker ones very inconspicuous. Antennæ (fig. 18) a little longer than the head and thorax; first joint stout, oval; second much narrower and half as long as the first; third to eighth subequal in length and gradually wider, the third fully twice as long as wide, the eighth one-half longer than wide, ninth subtriangular twice as long as the eighth and about one-half wider, tenth similar to the ninth but slightly smaller, eleventh elongate-oval, widest at middle, a little longer than the ninth and more slender. Prothorax two-thirds as long as wide, very obscurely impressed along median line, sides feebly arcuate, margin rather broadly flattened and a little reflexed, front and hind margins arcuate and a little sinuate each side, angles all rounded; surface as well as that of the head and elytra strongly, rather densely granulate-punctate, the granules becoming less strong on the head and toward the elytral apex. Under side sparsely inconspicuously pubescent and rather strongly, closely punctate throughout, the punctures simple and less close on the abdomen, becoming denser on the sterna and parapleuræ; the prosternum and mesosternum throughout and the anterior parts of the metasternum strongly granulose. Length 6–7.5 mm.

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This species is rather common locally from the New England States to Illinois. The localities represented in the material before me are New Hampshire, Massachusetts, Rhode Island, Michigan, Indiana, Illinois. It is not given in the New Jersey, District of Columbia or Southwestern Pennsylvania lists.

2. **X. affine** Lec.—Piceous brown, a little smaller on the average than *rufo-villosum*, the description of which applies sufficiently well except in the following particulars: The antennæ (fig. 19) are distinctly more slender; joints two to eight almost filiform; the prothorax is a little less widely margined at sides and the elytra are scarcely visibly granulose. Length 5.5--6.5 mm.

Vancouver, Washington, Oregon, Northern California (Sonoma County).

UTOBIUM new genus.

Joints five and seven of antennæ similar to and nearly as long as ninth to eleventh; terminal joints of maxillary palpi widest behind the middle, compressed and truncate at apex; last joint of labial palpi short, rapidly dilated and widely truncate; prosternal process parallel, not dilated behind the coxæ; plates of hind coxæ gradually wider internally; tarsi narrower, the third and fourth joints fully as long as wide. Otherwise similar to *Xestobium*.

One species is known.

1. **U. elegans** Horn.—Parallel, rather strongly convex, blackish brown, marmorate with short recumbent fuscous and cinereous hairs, the former more sparse, the latter condensed in small spots which tend to coalesce into imperfect fasciæ at the basal and apical fourth of the elytra, and are nearly wanting at the middle and toward the apex of each elytron. On the prothorax the pale hairs occupy the entire lateral fourth, a narrow transverse anterior fascia inclosing two rounded apical dark spots, and a posterior longitudinal line each side of the middle. Entire upper surface polished and rather densely punctate, not distinctly granulate at any part. Antennæ (fig. 20) less than half the length of the body, first joint robust, a little longer than wide; second somewhat similar but smaller; third and fourth narrow, the former more elongate; fifth and seventh elongate-triangular, twice as long and nearly twice as wide as the fourth; sixth and eighth triangular, scarcely longer than wide, narrower than and about half as long as the fifth and seventh; ninth and tenth similar to fifth and seventh but slightly longer; eleventh still longer and slightly narrower, feebly fusiform. Prothorax one-fourth wider than long, narrowed in front, sides somewhat flattened but less so than in *Xestobium*, disk not channeled. Elytra a little wider than and four times as long as the prothorax. Lower surface nearly black, closely, simply punctate and moderately pubescent. Tarsi paler, the first joint slightly longer than the next two. Second joint feebly, third and fourth more strongly emarginate superiorly for the insertion of the following joints. Length 5-6.5 mm.

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A widely distributed species, having been taken in Western Nevada (Morrison); Brightons, Utah; Marquette and White Fish Point, Michigan (Schwarz); and Anticosti Island (Dr. J. Schmitt).

MICROZOGUS new genus.

The above name is proposed for a minute species evidently allied to *Ozognathus*, but differing in its more compact form, glabrous surface, 10-jointed antennæ, and by the mesosternum being vertical between the coxæ. The prosternum is excessively short before the coxæ. The first ventral suture is nearly as well defined as the others.

1. **M. insolens** n. sp.—Oblong-elliptical, varying in color from pale brown to piceous, surface shining, glabrous, very sparsely minutely punctate. Prothorax as wide as the elytra, strongly transverse, the sides explanate, all the angles rounded. The antennal club is longer than in *Ozognathus*, being distinctly longer than all the preceding joints united, the first joint of the club quite as long as the terminal joint. The first four joints are proportioned nearly as in *Ozognathus*, the next three are very short and difficult to count. The prosternum is scarcely punctured at sides; the metasternum is distinctly but not closely punctate. The tarsi are short, the first joint scarcely longer than wide, at least on the front feet. Length 1–1.3 mm.

Florida (Key West and Biscayne).

OZOGNATHUS LeConte.

The members of this genus are small, oblong, subcylindrical, confusedly punctate and sparsely or moderately pubescent. Mentum subtrapezoidal; basal joint of maxillary palpi small, second and third joints a little elongate and widened apically, terminal joint larger, scarcely twice as long as wide, feebly dilated near the middle, the apex truncate; labial palpi similar, the terminal joint widest near the apex. Antennæ less than half the length of the body, the intermediate joints small and almost cylindrical, the third, fifth and seventh visibly longer, ninth to eleventh enlarged, forming a club, which is about equal in length to all preceding; the ninth triangular, twice as wide and about as long as the three preceding, the tenth similar but a little shorter, the eleventh visibly longer, elongate-oval. Eyes small, prominent. Prothorax evenly convex, with distinct angles. Elytra parallel and scarcely or slightly wider than the thorax. Anterior coxæ oval, not very prominent, narrowly separated, the prosternal process scarcely wider behind; prosternum

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before the coxæ subequal in length to the longitudinal diameter of the coxa. Mesosternum flat, a little oblique, middle coxæ more distinctly separated; hind coxal plates gradually dilated internally and obtusely angulate. First and second ventral segments longest, subequal, connate, the suture more or less obliterated in some species; third and fourth segments nearly equal and about three-fourths the length of the second; fifth segment a little longer than the fourth. Tarsi rather narrow, fourth joint a little dilated, as wide as long, fifth elongate.

Three species are indicated in the material at hand, two closely allied from the Pacific region, and one from the Atlantic and Gulf regions, capable of being separated subgenerically from the typical west coast forms. *Cornutus* has been bred from galls and it is probable that the other species have the same habits. The genus *Micranobium*, described by Gorham in the "Biologia," represents, says its author, "two types, one resembling a small *Cis*, the other a very small *Anobium striatum*." A specimen of the former of these, *M. exiguum*, sent me by M. Pic, proves to be an *Ozognathus;* the other is a *Petalium*.

Our three species separate in the following manner:

First ventral suture feebly marked, nearly obliterated at middle, each mandible of the male with an erect horn arising from its base, punctuation and pubescence denser.

Form stouter, color nearly black (California).....1. **cornutus.**

Form a little more elongate, color brown (Arizona) ....2. **dubius.**

First ventral suture distinct throughout, mandibles of male not horned, punctuation and pubescence relatively sparse.....3. **floridanus.**

1. **O. cornutus** Lec.—Rather stout, parallel, blackish brown, moderately shining, somewhat sparsely clothed with short, fine, pale, subrecumbent pubescence. Head and thorax moderately strongly, but not coarsely punctate, the punctures separated on an average by their own diameters; elytra more sparsely and rather more finely punctate, especially toward the apex. Antennæ rufous, the club frequently blackish, especially in the male. First joint stout, oval; second similar but smaller; three, five and seven distinctly elongate; four, six and eight shorter, nearly as wide as long; ninth to eleventh forming a loose club about equal to the preceding joints united; the ninth elongate-triangular, as long as the three or four preceding; tenth a little shorter; eleventh longer than the ninth. Prothorax transverse, sides nearly parallel and rather broadly rounded, sinuate before the hind angles, which are sharply defined and right or a little acute; base rounded, sinuate within the angles; disk even or with a faint impression each side the middle posteriorly. Elytra a little wider than the thorax, sides nearly parallel. Sterna and parapleuræ rather densely, evenly punctate; abdomen more sparsely punctured. Legs rufous throughout, or with the femora blackish. Length 1.5–2.8 mm.

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California. Rather common from San Francisco south, the localities represented in the material studied being "San Mateo County," Los Gatos, "Los Angeles County," Pomona, Riverside, Pasadena, Kaweah. There is much variation in size, in the prominence of the hind angles of the prothorax, and in the development of the mandibular horns of the male. These latter are sometimes not longer than their distance apart, but when fully developed attain the level of the prothorax (the front being vertical) curving outward then inward and approaching one another at tip. The joints of the antennal club are usually a little more elongate in the male, and the last ventral of the female is minutely sparsely granulate. In view of the great variability observed in *cornutus*, I cannot believe that *misellus* Lec. is anything more than a very small specimen of this species in which the hind angles of the prothorax are less prominent than usual. It was described from a unique female from San Diego.

2. **O. dubius** n. sp.—Very closely allied to *cornutus*, but evidently less stout, a little less shining, slightly more finely punctate and with the pubescence more obvious. These differences are small, but taken together seem sufficient for specific separation. In the types the color is brown, but some smaller examples from the same locality provisionally placed with the types are piceous in color. Length 2.4–2.7 mm.

Williams, Arizona (Barber and Schwarz). One specimen from Ouray, Colorado (Wickham) is probably not different.

3. **O. floridanus** Lec.—Black, shining; antennæ, legs and frequently the head and prothorax rufous; punctuation fine and sparse, closer on the prothorax; pubescence very fine, sparse and inconspicuous. Mandibles in the male without horns. Prothorax more strongly transverse than in *cornutus*, nearly or quite as wide as the elytra, the sides strongly rounded, margin minutely crenulate, hind angles small, obtuse. Beneath densely punctate anteriorly, ventral segments more sparsely so. Length 1.3–2. mm.

Occurs in the South Atlantic Coast Region. New Jersey (Anglesea), Virginia (Ft. Monroe), Florida (Crescent City and Tampa). With these I have placed a series taken by Mr. Schwarz at Goliad, Texas, which does not differ materially.

XARIFA new genus.

Labrum very short, arcuate in front, mentum subtrapezoidal; palpi short, terminal joint largest, ovate, pointed; antennæ 11-jointed, last three joints enlarged and together nearly or quite as long as

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all those preceding; the intermediate joints not at all serrate. Eyes rather small, rounded, and moderately prominent. Prothorax narrower than the elytra, sides not margined. Elytra parallel and subcylindrical. Prosternum as long before the coxæ as their diameter or very nearly so, intercoxal process narrow but distinct. Mesosternum oblique, narrowly separating the middle coxæ. Hind coxæ feebly grooved, the coxal plates narrow and evanescent before reaching the episterna. Ventral segments one and two longest, the latter slightly longer than the former behind the coxæ; third and fourth shorter, fifth nearly as long as the second. Legs moderate. Tarsal joints one to four decreasing in length, first about twice as long as wide, fourth not longer than wide, the fifth elongate, inserted upon the upper surface of the fourth. Tibiæ without distinct spurs.

1. **X. insularis** n. sp.—Dark brown, legs and antennæ paler; surface shining and sparsely pubescent. Head sparsely punctate, eyes a little more prominent than the sides of the prothorax. Antennæ half the length of the body; first joint robust, oval, second smaller but similar, third to eighth subcylindrical or slightly wider apically; four, six and eight but little longer than wide; three, five and seven more distinctly elongate; ninth to eleventh one-half wider than the preceding and nearly (♀) or quite (♂) as long as all the preceding united; ninth about equal to the three preceding; tenth scarcely as long; eleventh slightly longer than the ninth. Prothorax nearly as wide as long, widest before the middle, sides not margined, surface regularly convex and moderately closely granulate-punctate, the granules becoming feeble towards the middle, the median line smoother. Elytra distinctly wider than the thorax and about two and one-half times as long, sides parallel or very faintly wider posteriorly, punctuation simple, the punctures distant by about twice their own diameter at base, finer and more distant at apex. Punctuation and pubescence of lower surface similar to that above. Length 1.5-2.2 mm.

California, Santa Catalina and San Clemente Islands.

This species was discovered by me on Santa Catalina Island in July, 1894, and specimens were subsequently found by Mr. Joseph Grinnell on San Clemente. Specimens were shortly afterward sent to several specialists for an expression of opinion as to its relationship, but none were able to assign it a place except Mr. Schwarz, who referred it provisionally to *Dryophilus*. This latter genus is, however, more closely related to *Ernobius* by its contiguous front coxæ and differs furthermore from *Xarifa* in antennal and tarsal formation and in its striate elytra; it has not thus far been recognized in this country. In *Xarifa* alone, of all our genera, the tibial spurs are entirely lacking, or at least indistinguishable from the

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terminal bristles. All specimens seen but one are females, these differing from the male in their somewhat smaller eyes, shorter antennal club, and in the fifth ventral segment being strongly tuberculate before the apex.

ERNOBIUS Thomson.

Mentum transverse, trapezoidal; maxillary and labial palpi similar, the terminal joint largest, longer than wide, moderately dilated outwardly and obliquely truncate in the greater number of species, feebly dilated or nearly parallel in a few—*e. g. granulatus* and *luteipennis;* widest at or behind the middle, narrowed and feebly truncate at apex in *marginicollis, gentilis* and *trapezoideus.* Labrum strongly transverse, truncate or broadly arcuate in front. Antennæ 11-jointed, rarely 10 jointed (*gentilis* and *trapezoideus*), as long as or a little longer than half the body in the male, somewhat shorter in the female; the three outer joints much elongated and usually wider than the intermediate ones, which are not at all serrate. First joint moderately stout, second shorter and narrower but similar; the following joints somewhat variable in their relative lengths, but the third, fifth and seventh usually obviously longer than those adjacent to them, sixth to eighth shorter than those preceding, eighth shortest and sometimes distinctly transverse; ninth to eleventh not very unequal in length, their united length, except in females of a few species, longer than all the preceding and always longer in the male, in which they are narrower and more filiform than in the female. Eyes strongly convex, variable in size, but larger in the male. Epistoma short, the suture usually more or less arcuate and lightly impressed; straight or sinuate at middle and rather deeply impressed in *marginicollis* and *trapezoideus.* Prothorax wider than the head, except in male of *trapezoideus,* transverse, sides narrowly or more commonly rather widely margined (not margined in *trapezoideus*), hind angles sharply defined in *trapezoideus* only, usually more or less broadly rounded and often completely undefined.

Elytra parallel, elongate, as wide as or a little wider than the prothorax; confusedly punctate. Prosternum moderate or short before the coxæ, varying from about one-fourth the longitudinal diameter of the coxa in *granulatus* to one-half in *marginicollis.* Mesosternum moderate in length, oblique, becoming nearly horizon .

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tal in front where it is bifoveate for the reception of the front coxæ. Metasternum rather long, side pieces wide. Front coxæ contiguous, middle coxæ narrowly separated in most species, nearly or quite contiguous in a few. Legs rather slender, femora moderately thickened, not clavate, but subpedunculate at base in *marginicollis*; tibiæ and tarsi slender, the latter, however, in variable degree, being relatively stout in *marginicollis* and exceedingly slender in *trapezoideus*. First joint of tarsi equal to the two or rarely the three following; second joint subequal to the next two; fourth shortest, about as wide as long and more or less emarginate at apex (except *marginicollis*); fifth inserted upon the upper face of the fourth, usually nearly as long as the third and fourth united, and from two to three times as long as wide. Ventral segments not very unequal, the second always longer than the first, the fifth longer than the third or fourth. A sixth segment is nearly always visible and is usually sinuate or feebly notched at tip, the emargination usually a little more pronounced in the male, but in some species scarcely different in the sexes, in *fissuratus* the emargination is unusually deep.

The species of this genus are more or less elongate, parallel, moderately convex insects varying in length from 2–5.5 mm. They are all clothed with fine recumbent hairs which are very short and sparse in a few species, moderately plentiful in others, and in one—*marginicollis*—there are short intermixed erect hairs. Nearly all occur on pines.

Antennæ 10-jointed .....5.
Antennæ 11-jointed .....2.
2. Pubescence with intermixed, short erect hairs; sides of pronotum serrate; last joint of maxillary palpi widest at or behind the middle.....4.
Pubescence without intermixed erect hairs; sides of pronotum not serrate; last joint of maxillary palpi widest toward the apex.....3.
3. Ninth joint of antennæ shorter than the three preceding united in both sexes. Elytra more densely punctate (Atlantic States).....1. **mollis.**
Elytra less densely punctate (Pacific Coast).
Joints 6-8 of antennæ each more than twice as long as wide. 2. **socialis.**
Joints 6-8 of antennæ always less than twice as long as wide. 3. **punctulatus.**
Ninth joint of antennæ as long as the three or four preceding united.
Sides of prothorax nearly straight and convergent anteriorly, the front angles rounded; ninth joint of antennæ equal to the three and one-half preceding (♀?); brown, prothorax not granulate..4. **convergens.**

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Sides of prothorax arcuate, not distinctly convergent anteriorly; front angles well defined.

Blackish, prothorax paler and evidently granulate; ninth joint of antennæ equal to the three preceding.....5. **collaris.**

Fuscotestaceous, prothorax not granulate, ninth joint of antennæ (♂?) equal to the three preceding; tarsi rather stout.....6. **alutaceus.**

Fusco- or rufotestaceous, prothorax granulate, ninth joint of antennæ fully equal to the four preceding, tarsi slender.

Front (♂) a little less than twice as wide as the longest diameter of the eye and scarcely two and one-half times its width; sixth ventral deeply cleft.....7. **crotchii.**

Front (♂?) fully twice as wide as the longest diameter of the eye and about three times the width of the latter; sixth ventral broadly emarginate.....8. **gracilis.**

Ninth joint of antennæ as long as the five or six preceding united in the male (Rocky Mt. and Pacific Coast species, except *lacustris*).

Pronotum granulate-punctate.

Piceous brown, size larger (4.8-5.5 mm.), Michigan.....9. **lacustris.**

Brown, size larger (5.1-5.2 mm.), Arizona.....10. **fissuratus.**

Black, size smaller (2.4-3.6 mm.), California, Arizona.....11. **nigrans.**

Pronotum simply punctate, at least broadly so at middle.

Black (♂), brown (♀); prothorax transversely impressed.

12. **pallitarsis.**

Black (♀ not known); prothorax not at all impressed transversely.

13. **tristis.**

Rufotestaceous or brown in both sexes.....14. **montanus.**

Ninth joint of antennæ fully equal to the six preceding in the male (Atlantic States species).

Fifth joint of antennæ subequal to the fourth and much shorter than the third; elytra more shining than the head and pronotum.

Head and pronotum opaque, scabrous punctate or feebly granulate, elytra shining; color piceous.....15. **filicornis.**

Head and pronotum granulate and opaque, elytra variable but usually subgranulate or feebly scabrous toward the base, more shining toward the apex; color rufotestaceous.....16. **granulatus.**

Fifth joint of antennæ much longer than the fourth and subequal to the third; elytra less shining than the head and pronotum..17. **opicus.**

Ninth joint of antennæ nearly equal to all the preceding in the male; joints 6-8 quite strongly transverse, the eighth sublenticular in the male (Atlantic States).

Head and prothorax black or piceous, the elytra testaceous in the male; head and prothorax usually a little darker than but sometimes concolorous with the elytra in the female.....18. **luteipennis.**

Entirely rufotestaceous.....19. **tenuicornis.**

4. Dark brown, ninth joint of antennæ equal to the five preceding in the male, a little longer than the three preceding in the female; last ventral segment more or less evidently bituberculate in the female.

20. **marginicollis.**

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5. Hind angles of prothorax undefined, the sides broadly rounding into the base. **21. gentilis.**

Hind angles of prothorax distinct and a little prominent; sides nearly straight and convergent from the base, the margin ill defined. **22. trapezoideus.**

1. **E. mollis** Linn.—Rather robust, brown, not very strongly shining, clothed with short, fine, recumbent, cinereous or fulvo-cinereous hair. Head granulate-punctate, eyes separated on the front by about twice their vertical diameter, only slightly larger in the male. Antennæ half the length of the body (♀) or a little longer (♂), all the joints longer than wide; joints 2–4 nearly equal and slightly narrower than those following; 5 and 7 longer than 4, 6 and 8; 9 filiform and a little longer than 7 and 8 united (♂), or a little wider apically and barely equal to 7 and 8 (♀); 10 and 11 each subequal to 9, the three united slightly longer than all the preceding (♂), or barely as long (♀). Prothorax as wide as the elytra, strongly transverse; sides rather strongly arcuate and broadly margined, front angles rounded, hind angles not defined; surface quite closely granulate-punctate, disk a little uneven but without distinct transverse impression. Elytra parallel, about twice as long as wide, punctuation nearly as dense but slightly finer than that of the prothorax, scarcely granulate, except near the base. Metasternum at sides closely, at middle more sparsely punctate, the episterna densely so; abdomen rather finely and sparsely punctured; prosternum short before the coxæ, being about one-fourth the coxal length; basal joint of tarsi subequal in length to the next two together. Length 4–5½ mm.

This common European species has been introduced into the Atlantic States where it occurs in the coast region from Maine to Virginia. I have seen no specimens from west of the Alleghanies, and do not know how far into the interior the species has penetrated. In the Michigan list Hubbard and Schwarz record this species from Marquette, but this is an error of identification, the form found being the one described in the present paper as *cpicus*. Hamilton speaks of it in his List of the Coleoptera common to Europe and North America as being found near Pittsburg, but does not give it in his Southwestern Pennsylvania List published six years later. Drury records it in his Cincinnati List, but this may also be in error. It is not rare in eastern New England on or about pine trees.

2. **E. socialis** n. sp.—Similar in form and color to *mollis* and *punctulatus*, but more shining than either, because of the finer, sparser, elytral punctuation which is not at all granulate, or only at the extreme base. Head distinctly granulate; eyes large, the width of the front between them not more than one and three-fourths times their vertical diameter. Antennæ more slender than in *mollis* or *punctulatus*, joints 6–8 each fully two and one-half times as long as wide, the fifth evidently, the seventh slightly longer as usual; ninth a little longer than seventh and eighth united and fully five times as long as wide. Prothorax granulate-

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punctate, nearly equal to the elytra in width, sides nearly as strongly rounded as in *mollis*. Pubescence of upper surface a little longer and more yellow than in *mollis*. Length 4½ mm.

California, Santa Clara County.

With the type, which is a male in my collection, is placed another male in the Horn collection which is larger (5½ mm.), with the antennal joints even more elongate, though perfectly similar in their mutual proportions, the prothorax not granulate on the disk and less broadly margined at sides. In both specimens the elytra are a little swollen and paler in color on either side of the suture at the apex, a character which has been observed in individuals of several other species.

3. **E. punctulatus** Lec.—Similar in color and form to *mollis* but smaller, with rather more shining surface and longer more fulvous pubescence. Head and prothorax quite closely and conspicuously granulate-punctate, elytra with simple punctures which become granulate at base. Eyes moderate, front fully twice as wide as their vertical diameter in the male and slightly wider in the female. Antennæ proportioned nearly as in *mollis*, joints 6–8 each scarcely twice as long as wide, the ninth but little if any longer than the two preceding united. Prothorax less strongly rounded at sides, the front angles more distinct, and the elytral punctuation less close than in *mollis*. Length 2½–4½ mm.

California, Oregon, Washington, Vancouver.

A common species ranging along the coast from below San Francisco to Victoria, and in the Sierras from Middle California to Hood River, Oregon, and eastern Washington. In a considerable number of specimens, notably in those from the Sierras of California, the three outer joints of the antennæ are infuscate. There is also much variation in size and in the extent of the surface granulation, the elytral punctuation of certain small specimens from the coast region being subgranulate throughout. In these smaller specimens the intermediate joints of the antennæ are often relatively shorter than in typical specimens, but in a considerable series showing every gradation in size it is impossible to draw any line of separation. One of these smaller forms was described as *debilis* by LeConte; I must, with present light, regard it as a synonym of *punctulatus*.

4. **E. convergens** n. sp.—Brown, moderately shining and generally similar in appearance to *punctulatus*, from which it differs as follows: The sides of the prothorax are less widely margined, less arcuate, and distinctly though not strongly convergent from base to apex. The punctuation is not distinctly granulate at any part, the punctures of the head being surrounded by a narrow feebly raised annulus, which is still less obvious on the prothorax, the punctuation of

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the latter being denser than in *punctulatus*. Joints 2 and 4 of the antennæ are of equal length, 6 and 8 are equal and a little shorter, 3 and 5 nearly equal and very distinctly longer; 7 shorter than 3 or 5, but longer than 6 or 8; 9 rather longer than the three preceding united and evidently narrower than in *punctulatus*. Length 4¼ mm.

California. One example, seemingly a female, in the Horn collection.

5. **E. collaris** n. sp.—Form of *punctulatus*; black, prothorax dark rufous, tibiæ and tarsi paler. Head densely granulate, eyes rather small, separated on the front by three times their vertical diameter; antennæ (♀) rather short, joints 2-5 nearly equal, third and fifth a little longer, 6-8 shorter, the seventh just visibly longer than the sixth or eighth, sixth and eighth scarcely longer than wide; ninth fully as long as sixth to eighth united. Prothorax a little more strongly rounded on the sides, and with the front angles more rounded than in *punctulatus*; punctuation throughout nearly as in the latter species; pubescence cinereous. Length 3.4 mm.

California (Pasadena).

Described from a single female specimen taken by Dr. Fenyes, in whose collection the type remains. This species should be at once known by its color if that proves constant, otherwise the very short sixth to eighth joints of the antennæ may be relied upon to distinguish it from its allies, of which the smaller forms of *punctulatus* seem nearest. The prosternum is unusually long before the coxæ, being fully equal to half the coxal diameter from front to back.

6. **E. alutaceus** Lec.—Size of rather large *mollis*, but obviously narrower than either that or *punctulatus*. Head finely granulate, prothorax scarcely visibly so, elytra with simple, fine punctuation, except at extreme base, where it becomes finely granulate. Prothorax distinctly transversely impressed across the middle of the disk, the outline and angles nearly as in *punctulatus*. Joints 3, 4, 6 and 8 of antennæ nearly equal, 5 and 7 a little longer, but the disparity is less marked than in *mollis* and *punctulatus*; 9 subequal to the three preceding.

The type is said by LeConte to be a female, but this is by no means certain; indeed, I should rather think it a male, judging from the parallel ninth antennal joint and the prominent eyes, the front barely twice as wide as the longest diameter of the eye, or about two and one half times the width of the eye as seen from the front. The sixth abdominal segment is feebly notched at the tip. Tarsi quite stout for an *Ernobius*.

"California." Collected by Murray.

7. **E. crotchii** n. sp.—Similar in form to *alutaceus* or very slightly more elongate, prothorax plainly granulate, base of elytra just visibly so. Prothorax narrower than in *alutaceus* and fully three-fourths as long as wide, obviously narrower than elytra at base, the transverse impression feeble but traceable.

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Eyes and front nearly as in *alutaceus;* antennæ slender, joints 2, 3 and 4 nearly equal, the second stouter; 3 and 4 fully twice as long as wide (similarly proportioned but stouter in *alutaceus*); 6 and 7 subequal, the latter just visibly the longer, and each very slightly shorter than 2, 3 or 4; 8 shorter, as wide as long or very nearly so; 9 a little longer than the four preceding. Sixth ventral deeply cleft; tarsi more slender than in *alutaceus.*

California. Collected by Crotch, near San Francisco if my memory serves me.

The specimen which forms the type of this species was placed with the type of *alutaceus* in the LeConte collection, but though there is a considerable resemblance between them I believe them quite distinct. The type of *Crotchii* is certainly a male, the genitalia being exposed.

8. **E. gracilis** Lec.—"Elongate, rufotestaceous, less shining, finely pubescent, densely scabrous-punctulate. Eyes moderate in size, very convex. Antennæ half the length of the body, rather stout, joints 3–8 nearly equal in length, 5–8 wider than 3rd and 4th; 9th as long as the five preceding united, 10th and 11th each as long as the ninth. Prothorax more than twice as wide as long, sides very much rounded and widely margined, concavity of the margin extending along the base to a basal fovea, where it becomes narrower. Elytra convex, finely margined." "Length 3.7 mm."

"Garland, Colorado; one male."

LeConte's statements that joints 3–8 of the antennæ are nearly equal in length, and that the prothorax is more than twice as wide as long are probably both incorrect, at least they do not at all apply to any other species in our fauna and it is easier to believe an error has been made in description than to imagine so great a deviation from the prevailing type.

Since the above transcription of LeConte's original description and the remarks following were written, I have personally examined the type at Cambridge and find the description to be in error as suspected above. The prothorax is of the usual form and plainly less than twice as wide as long. Joints 3, 5 and 7 of the antennæ are subequal, and 4, 6 and 8 are also subequal and a little shorter; 9 is not much longer than the four preceding. The front is about twice as wide as the longest diameter of the eye; the prothorax very feebly, just visibly granulate; the sixth ventral broadly not deeply emarginate. According to LeConte the type is a male; of this I do not feel at all certain.

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9. **E. lacustris** n. sp.—Nearly similar in form, but a little larger than the average *mollis*, and also a trifle more slender; color piceous brown, the suture indefinitely paler. Head and prothorax closely conspicuously granulate; elytral punctuation nearly as in *mollis*; pubescence short, fine and rather sparse. Eyes in the male large, the width of front less than twice their vertical diameter; evidently smaller in the female, the front a little wider than twice their vertical diameter; frontal suture more strongly impressed than in *mollis*. Antennæ a little longer than half the body in the male; third joint a little longer than the fourth or fifth, the latter two nearly equal and together nearly as long as 6-8; seventh just visibly longer than the sixth or eighth; ninth very elongate, filiform, a little longer than the five preceding in the male, a little shorter in the female. Prothorax rather less strongly transverse than in *mollis*, front angles rounded, hind angles undefined. Length 4.8-5.5 mm.

Michigan, Marquette and Ann Arbor (Hubbard and Schwarz); Dakota (Ulke collection).

10. **E. fissuratus** n. sp.—Moderately elongate, brown, head and prothorax granulate-punctate. Joints 2-5 of antennæ subequal, 2 and 5 being just visibly longer than 3 or 4; 6 8 short, 7 evidently longer than 6 or 8, the latter two about as wide as long in the male, but a little elongate in the female; 9 nearly equal to the six preceding in the male or four preceding in the female. Prothorax less than twice as wide as long, front angles distinct, hind angles rounded but somewhat defined. Length 5.1-5.2 mm.

Williams, Arizona. Two examples taken by Barber and Schwarz. This species resembles both *gracilis* and *montanus*, but seems clearly distinct. From the former it differs in its less transverse prothorax and differently proportioned antennal joints; from *montanus* it may be separated by its larger size, granulate head and thorax, smaller eyes, different proportions of joints 2–5 of antennæ, and less broadly rounded hind angles of prothorax. The sixth ventral segment in *fissuratus* is deeply cleft in the male, the fissure about one third as long as the fifth ventral, and in the female it is deeply triangularly emarginate, the emargination as deep as wide. In *montanus* the sixth ventral segment is broadly emarginate, the emargination much wider than deep and nearly the same in both sexes.

11. **E. nigrans** n. sp.—Rather slender, black, legs and antennæ slightly or distinctly paler; pubescence fine, sparse, dusky in color and quite inconspicuous. Head and prothorax closely granulate, elytra sparsely punctate at apex, the punctures becoming stronger, closer and somewhat asperate at base. Eyes moderate, their vertical diameter barely equal to half the width of the front in the male, and evidently less in the female. Joint 3 of antennæ but slightly if any longer than 2, but much narrower; 4 and 5 a little shorter than 3 and mutually nearly equal; 6, 7 and 8 shorter, each nearly or quite as wide as long, 7 a trifle longer than 6 or 8; 9 nearly equal to the six preceding in the male. In the female, joints 2-5 are subequal, 6 and 7 a little shorter and but slightly longer

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than wide, 8 a little shorter still, 9 equal to the four preceding. Prothorax transverse as usual, sides nearly straight and a little convergent toward the front, margin moderately reflexed, front angles distinct, hind angles rounded, but much less broadly so than in *mollis*. Metasternum sparsely punctate, especially posteriorly. Middle coxæ contiguous. Length 2.4-3.6 mm.

California (Lake Tahoe); Arizona (Williams).

Described from about a dozen specimens collected by Dr. Fenyes, Barber and Schwarz, and the author.

12. **E. pallitarsis** n. sp.—Very similar in facies and structure to *nigrans*, but the sexes here seem to differ uniformly in color, all the males seen being black, and all females brown. The prothorax appears to be a little more ample and more distinctly transversely impressed, the sides more rounded, the surface simply punctate. The metasternum is more densely punctate than in *nigrans*, and the tarsi are rather less slender, and as a rule more abruptly pale. *Pallitarsis* is on the whole a rather larger and smoother species and is unique thus far in the different coloration of the sexes. Length 2.8-4.1 mm.

This species is represented by a good series from the Lake Tahoe region in California; Hood River, Oregon, and Easton, Washington.

13. **E. tristis** Lec.—Elongate, black, shining; tibiæ picescent, tarsi paler; pubescence sparse and fine. Eyes moderate, front about three times as wide as the longest diameter of the eye, and about four times the width of the eye. Antennæ half as long as the body, joints 2, 3 and 5 about equal in length, the second stouter, as usual; 4 and 7 a little shorter and subequal, 6 still shorter and only slightly longer than wide; 8 smallest, as wide as long; 9 a little shorter than the five preceding. Tarsi very slender; sixth ventral not notched or emarginate.

Veta Pass, Colorado; a single male specimen in the LeConte collection.

As compared with *nigrans*, *tristis* is much more shining, with smaller less prominent eyes, the seventh antennal joint much longer, about twice as long as wide (not much longer than wide in *nigrans*) and the ninth joint relatively shorter. The male of *pallitarsis* is also less shining than *tristis*, with closer punctuation and strongly transversely impressed prothorax (not at all impressed in *tristis*) and the eyes are much larger, and the ninth antennal joint longer.

14. **E. montanus** n. sp.—Elongate, pale brown, simply punctate throughout, pubescence grayish, moderately conspicuous. Eyes very large in the male, the front between them not wider than one and one-half times their diameter; in the female distinctly smaller, the front twice as wide as their vertical diameter. Antennæ (♂) with joints 2 and 4 nearly equal in length, the former much thicker and a little longer than wide; 3 fully one-half longer than 2 or 4, and a little longer than 5; 7, 6 and 8 progressively shorter than 4, the latter as wide as long or even slightly transverse; 9 about equal to the six preceding. In the female the rela-

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tive lengths of the joints are nearly as in the male, but 6 and 8 are always evidently longer than wide, 9 as long as the four preceding. Prothorax a little less than twice as wide as long, the sides rather strongly rounded, margins moderately reflexed, disk more or less evidently transversely impressed at the middle from side to side, the impression most distinct laterally. Prosternum short before the coxæ; metasternum densely punctate. Length 3-4.2 mm.

Southern Sierras of California.

Abundant on pines in the San Bernardino Mountains. One specimen sent by Mr. Fuchs is labeled Tulare County. With the typical form I have placed a series taken by Barber and Schwarz at Williams, Arizona, which are so close to the types that there can be little doubt of their identity.

15. **E. filicornis** Lec.—Elongate, head and thorax black, opaque; elytra piceous or brownish piceous, shining. Punctuation of head and thorax fine, the surface scabrous but not distinctly granulate; elytral punctures moderate in size, simple, becoming sometimes subasperate toward the base. Pubescence very short, fine and sparse. Eyes very large and convex, the width of the front not much greater than the vertical diameter of the eye in the male and less than twice that diameter in the female. Third joint of antennæ a little longer than the second and subequal to the fourth and fifth, or to the sixth to eighth united; fourth to eighth all short, the fourth and fifth a little longer; sixth to eighth each as wide as or a little wider than long; ninth equal to the six preceding or nearly so. Prothorax less than twice as wide as long, sides moderately rounded and narrowly margined, front angles distinct, hind angles not defined, disk not distinctly impressed. Elytra evidently a little wider than the prothorax. Prosternum very short before the coxæ; metasternum opaque, sparsely punctate. Length 2.4-3 mm.

Occurs, but not commonly, in the Atlantic coast region from Massachusetts to Virginia.

The terminal joints of the palpi are less dilated outwardly in this species than in any preceding, the sides being nearly parallel. This form is nearly repeated in two of the following species—*luteipennis* and *granulatus*—and the reduction of the apical dilatation is carried still further, the joint becoming widest at or before the middle in *marginicollis*, *gentilis* and *trapezoideus*.

16. **E. granulatus** Lec.—Moderately elongate, rufotestaceous, entire surface opaque or with the elytra feebly shining; the head, prothorax and base of the elytra granulato-reticulate, the latter becoming simply punctate posteriorly though often somewhat scabrous; pubescence very short and sparse, cinereous. Eyes very large and convex in the male, the front but little wider than their vertical diameter; distinctly smaller in the female, the front scarcely twice as wide as their vertical diameter. Joint three of antennæ just visibly longer than two and very nearly equal to four and five united; six and seven subequal and about as wide as long, eighth distinctly transverse, nine as long as the five (♀) or six (♂) preceding united. Prothorax as wide as the elytra at base, the sides

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rather strongly rounded and finely margined; anterior angles distinct, posterior completely undefined; surface usually lightly transversely impressed at the middle. Prosternum very short before the coxæ; metasternum sparsely rather finely granulate. Length 2.3–4.3 mm.

Occurs along our entire Atlantic seaboard, but is evidently more common toward the south. The following localities are represented in the material before me. Massachusetts (Bowditch); New York; Pennsylvania; New Jersey; District of Columbia; Piney Point, Maryland; Ft. Monroe and Virginia Beach, Virginia; St. Catherine Islands, Georgia; Lake Mary, Enterprise and Tampa, Florida.

One specimen from Mandeville, Louisiana (National Museum collection) is a little aberrant, but is placed here provisionally; another labeled Kansas (Bowditch collection) is not separable from the eastern forms.

17. **E. opicus** n. sp.—Similar in color and form to *granulatus;* best described by comparison with that species. The elytra are distinctly scabrous and opaque throughout, the small granules reaching quite to the apex, the surface of duller lustre than the prothorax, which is plainly punctured, each puncture occupying the centre of a flattened rounded tubercle. In *granulatus* the elytra are more shining than the thorax, the latter granulate but not distinctly punctured. The pubescence is in *opicus* evidently longer and less sparse and fulvo-cinereous in color. The head is punctured like the prothorax. The antennæ are similar to those of *granulatus*, except that the fifth joint is much longer, being quite as long as the third. The prothorax is more widely margined and subexplanate at sides, the hind angles somewhat defined (not at all so in *granulatus*), the front margin sinuate immediately before the angles (straight in *granulatus*). In its exceedingly short prosternum before the coxæ and its sparsely granulate metasternum *opicus* agrees with *granulatus*. The last joint of palpi is distinctly dilated apically, scarcely so in *granulatus*, agreeing in this respect with the species placed at the head of the genus. Length 3½ mm.

Described from two perfectly identical females from Massachusetts (Blanchard), Marquette, Michigan (Hubbard and Schwarz).

The elytra are more conspicuously granulate than in any other species in our fauna, and the peculiar sinuation of the front margin of the prothorax just before the angles has not been observed elsewhere.

18. **E. luteipennis** Lec.—Rufotestaceous or brownish yellow; prothorax, especially in the male, more or less piceous, the margin frequently paler; under side darker, the legs pale or with the femora darker. Head and prothorax densely granulate-punctate and dull; elytra simply, more sparsely punctate, shining; pubescence gray, moderately well developed. Eyes not very large, a little smaller in the female; front about twice as wide as their vertical diameter

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in the male, evidently more than that in the female. Joint three of the antennæ barely as long as two and nearly equal to four and five together, the latter two mutually equal; sixth to eighth subequal and scarcely as wide as long in the female, strongly transverse in the male; ninth nearly as long as all the preceding united in the male, and rather longer than the five preceding in the female. Prothorax less than twice as wide as long, narrowed in front, sides moderately rounded and somewhat explanate, hind angles wanting. Prosternum before the coxæ about as long as half the thickness of the coxa from front to back. Metasternum rather closely scabrous punctate. Length 2.5–4 mm.

Massachusetts, on pine boughs (Blanchard); New Jersey; District of Columbia; Odenten, Maryland; Ohio; White Fish Point, Lake Superior (Hubbard).

19. **E. tenuicornis** Lec.—Very similar to *luteipennis*, differing chiefly in its uniformly rufotestaceous color in both sexes, and in the narrower and longer three outer antennal joints, these being scarcely wider than the preceding joints (about twice as wide in *luteipennis*) and each subequal in length to all of them combined. The prothorax is rather more coarsely granulate than in *luteipennis* and the last palpal joint is a little more dilated externally. Length 3.5 mm.

The type of this species was taken at York, Pennsylvania; the few specimens before me are from Massachusetts (collections of Blanchard and Bowditch), where it occurs, but uncommonly on *Pinus rigidus*.

20. **E. marginicollis** Lec.—Moderately elongate, dark brown, punctuation simple or very nearly so throughout, rather close on the head and prothorax, sparser on the elytra; pubescence cinereous, unusually long and abundant with intermixed erect hairs. Eyes rather small but strongly convex, the front a little wider than twice their vertical diameter in the male and still wider in the female; front quite deeply transversely impressed along the epistomal suture. Terminal joint of palpi widest at or behind the middle and narrowing apically. Third joint of antennæ slightly longer than the second or fourth; sixth to eighth short, ninth as long as the five preceding in the male, a little longer than the three preceding in the female. Prothorax scarcely as wide as the elytra, less than twice as wide as long, sides nearly parallel or slightly convergent anteriorly, broadly rounded, margin rather wide, distinctly reflexed and serrulate along the edge; hind angles nearly as well defined as the front ones. Prosternum longer than usual before the coxæ, being evidently more than half the coxal diameter from front to back. Metasternum sparsely punctured posteriorly, more closely in front. Legs strongly narrowed or pedunculate at base. Length 2.25–5.2 mm.

Oregon, Vancouver, California.

The type is a male said to be from the first named locality, and with it in the LeConte collection is a female from Vancouver. All the specimens at hand are from the Middle California coast region, San Francisco, Alameda, Santa Clara and San Mateo Counties. A number of specimens in the series before me differ slightly from what

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I consider the typical form, in the almost total absence of erect hairs and the more distinctly pedunculate legs, but agree so perfectly in the serrulate sides of the prothorax, deeply impressed epistomal suture and palpal formation that I am loath to consider them distinct. In all females of the assumed typical form the last ventral segment is bituberculate each side, but in variable degree. This character is not clearly evident in the Vancouver female, nor is it present in the varietal form mentioned above.

21. **E. gentilis** n. sp.—Strongly elongate, blackish brown, tarsi paler. Head and thorax rather densely granulate and dull, elytra with sparser simple punctures, which become subasperate at base; pubescence very short, fine and inconspicuous. Eyes small, their vertical diameter scarcely half (♂) or about one-third (♀) the width of the front. Terminal joint of palpi a little narrowed apically. Antennæ slender, ten jointed, joints two and three nearly equal in length, fourth and sixth subequal and shorter, fifth and seventh subequal and still shorter, rather wider than long; eighth a little longer than the four preceding in the female, more parallel and longer than the five preceding in the male. Prothorax not quite as wide as the elytra, sides moderately strongly rounded and a little reflexed, front angles more rounded than usual, hind angles scarcely defined. Prosternum moderate in length before the coxæ; metasternum not clearly punctate. Legs slender. Length 3 mm.

Easton, Washington (Koebele); North Bend, British Columbia (Schwarz).

This species agrees with the next only, in the 10-jointed antennæ, but it is quite normal in prothoracic structure, while that is decidedly aberrant.

22. **E. trapezoidens** n. sp.—Very elongate, pale yellowish brown, head and under surface piceous brown; pubescence short, fine and sparse. Head across the eyes much wider than the prothorax, the eyes (♂) very large and convex, their vertical diameter about three-fourths the frontal width; epistomal suture impressed; surface alutaceous, rather sparsely subgranulately punctate. Last palpal joint widest behind the middle and narrowing apically. Antennæ 10-jointed, joints two, three and five about equal in length, four just visibly longer; six slightly shorter; seventh shortest but evidently longer than wide, eighth, ninth and tenth very narrow, linear, subequal, and each about as long as joints three to seven united. Prothorax evidently narrower than the elytra, trapezoidal in form, the sides not distinctly margined, straight and a little convergent anteriorly, hind angles sharply defined and nearly right, front angles a little obtuse, surface alutaceous and slightly scabrous but not distinctly granulate, a transverse median impression. Elytra finely simply punctate. Prosternum rather long before the coxæ. Legs very slender, first tarsal joint subequal to the next three. Sixth ventral strongly rounded and not at all emarginate at apex. Length 3–4 mm.

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The type described above is a male, collected by Koebele in the Argus Mts. in southeastern California. There are also females from the same locality which are undoubtedly correctly associated with the males but which differ quite conspicuously in the much smaller eyes, larger thorax, this being distinctly wider than the head, and the shorter though parallel outer antennal joints. One of these females is entirely black, except the tarsi, but seems scarcely different otherwise. Several specimens taken at Brightons, Utah, by Hubbard and Schwarz, and one at Tallac (Lake Tahoe), California, by Dr. Fenyes, are nearly identical with the Argus Mountains female, though differing a little in the relative lengths of the antennal joints, and these together with a male from Ouray, Colorado (Wickham), which differs in a similar way from the type, are all placed here for the present. All these agree in the most essential characters; *viz.*, the 10-jointed antennæ, trapezoidal thorax with sharply defined hind angles, palpal formation and unusually long first tarsal joint.

PARALOBIUM new genus.

Mentum transverse, trapezoidal; palpi slender, first joint very short, second and third longer than wide, a little dilated apically; terminal joint not wider than the preceding, widest near the base, elongate-acicular, not compressed. Labrum arcuate in front. Antennæ 11 jointed, three outer joints longer, intermediate joints serrate. Eyes large (♂), or moderate (♀). Prothorax not margined at sides. Elytra elongate, parallel; punctuation confused. Prosternum longer before the coxæ than the longitudinal diameter of the latter, with short intercoxal cusp. Mesosternum trapezoidal, oblique, not carinate or foveate in front. Metasternum declivous in front, median line sulcate posteriorly. Ventral segments one to four not very unequal, fifth longer, parabolically rounded. Front and middle coxæ very prominent, contiguous, hind coxæ moderately sulcate, coxal plates gradually wider internally. Legs long and very slender, tarsal joints one to four decreasing in length, first joint shorter than the next two together, the fourth fully twice as long as wide, not at all emarginate; fifth joint inserted at the apex of the fourth, very slender, linear, about as long as the third; claws simple.

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1. **P. mundum** n. sp.—Elongate, parallel, piceous, rather densely clothed with short recumbent cinereous hair, with very short intermixed erect hairs which are only visible in profile. Head (♂) as wide as or a little wider than the prothorax; eyes large, strongly convex, their vertical diameter a little greater than half the width of the front; surface densely, finely scabrous, punctate and dull. Antennæ about four-fifths as long as the entire body, first joint elongate-oval; second short, rounded; third to eighth strongly acutely serrate, the third as wide as long, the following joints gradually longer, the eighth twice as long as wide; ninth to eleventh longer, linear, slightly increasing in length, the eleventh about equal to the seventh and eighth united. Prothorax about one-third wider than long, base broadly arcuate and a little wider than the apex, sides feebly rounded, surface dull and densely punctulate, the sculpture indistinct, because of the pubescence. Elytra obviously wider than the prothorax and four times as long, finely, densely punctulate, with sparser scattered coarser punctures. The pubescence in well preserved specimens is condensed in four narrow longitudinal lines between which the surface is vaguely subsulcate. Beneath punctured and pubescent as above but without the erect hairs. Length 4.5–6 mm.

California, Redondo and Santa Monica.

This species frequents the sand dunes overlooking the ocean and is probably not rare. I have taken it from March to June in the salt vats at Redondo, into which the insect had fallen while flying about at night. All the specimens seen thus far with a single exception in Dr. Van Dyke's collection are males. This solitary female differs from the male in its smaller eyes, in the head being distinctly narrower than the prothorax and in its shorter less strongly serrate antennæ; these being barely half as long as the body, the intermediate joints feebly obtusely serrate. The three outer joints decrease slightly in length instead of increasing as in the male, a quite remarkable character. The prothorax is also more nearly equal to the elytra in width and the last palpal joint is less acutely pointed.

Anobiini.

This tribe includes those genera in which the head is received in repose on the under surface of the prothorax, which is distinctly excavated for its reception. The mandibles do not reach the metasternum, the trunk is never excavated for the legs, and the contractile power is therefore far less developed than in the following tribes. The form is always parallel and at least moderately elongate. Our genera may be separated by the following table:

Anterior coxæ contiguous or narrowly separated, the prosternal process cuspiform, becoming laminate posteriorly (except in *Oligomerus sericans* and *O. tenellus*).....2.

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Anterior coxæ distinctly or even widely separated, the prosternal process parallel, the antennæ usually received between the coxæ in repose.....7.

2. Last three joints of antennæ much elongated.....4.
   Last three joints of antennæ not conspicuously longer.....3.

3. Antennæ rather feebly serrate in both sexes.....**Actenobius.**
   Antennæ pectinate in the male, serrato-pectinate in the female.
   Enceratocerus.

4. Side margin of prothorax entire, joints of antennal stem usually short, not distinctly serrate or pectinate, tarsi less slender.....5.
   Side margin of prothorax obliterated anteriorly, antennal stem serrate or pectinate; tarsi slender, the third and fourth joints not emarginate, the articulation strictly terminal.....**Xeranobium.**

5. Middle coxæ distinctly separated; third and fourth tarsal joints emarginate (except in *Oligomerus tenellus*); elytra punctate-striate.....6.
   Middle coxæ approximate; third joint of tarsi not emarginate; elytra with indistinct or feebly defined rows of punctures....**Oligomerodes.**

6. Last joint of both labial and maxillary palpi elongate, fusiform; front coxæ contiguous (except in *sericans* and *tenellus*); antennæ 9-, 10-, or 11-jointed.....**Oligomerus.**
   Last joint of maxillary palpi parallel and obliquely truncate; last joint of labial palpi broadly triangular; front coxæ distinctly separated; antennæ 11-jointed.....**Sitodrepa.**

7. Antennæ serrate, joints 9–11 not conspicuously longer.....18.
   Antennæ not serrate, 9–11 long.....8.

8. First two ventral segments connate, the suture obliterated at middle; prothorax without side margin, except toward the base.....**Gastrallus.**
   First ventral suture distinct; side margin of prothorax entire, except in *Hadrobregmus defectus*.....9.

9. Antennæ not pectinate in either sex.....10.
   Antennæ pectinate in the male.....**Ctenobium.**

10. Claws with a broad basal tooth.....11.
    Claws not toothed.....12.

11. Thighs rather strongly clavate.....**Ptinodes.**
    Thighs not or but feebly clavate.....**Trichodesma.**

12. Vestiture relatively dense, the upper surface and legs with intermixed longer erect hairs.....13.
    Vestiture sparser and completely recumbent.....14.

13. Metasternum not excavated in front; outer apical angle of tibiæ not everted.
    Nicobium.
    Metasternum moderately deeply excavated in front; outer apical angle of front and middle tibiæ acutely produced.....**Anobiopsis.**

14. Ventral segments free, sutures distinct, tarsi narrower.....15.
    Ventral segments connate; sutures, except the first, faint or obliterated at middle, tarsi stouter.....17.

15. Metasternum not deeply excavated anteriorly, at most a little concave.....16.
    Metasternum deeply excavated in front.....**Anobium.**

16. Third ventral segment short, tibiæ not produced externally at apex.
    Hadrobregmus.
    Third ventral segment long, tibiæ produced externally at apex.
    Microbregma.

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17. Metasternum deeply excavate in front; ventral punctuation annulate. **Cœlostethus.**

18. Metasternum deeply abruptly excavate; ventral segments connate. the punctures annulate; elytra punctate-striate..... **Trypopitys.**

Metasternum moderately deeply, less abruptly excavated; ventral segments free, punctuation simple; elytra irregularly punctate. **Colposternus.**

ACTENOBIUS new genus.

This name is proposed for a small number of Californian species which strongly resemble a very slender *Oligomerus*—notably *O. sericans*—but differ radically in antennal formation, these organs being rather feebly serrate, with joints 3–10 of nearly equal length; second joint short, oval; eleventh nearly linear, a little longer than the tenth. The palpi are nearly as in *Oligomerus sericans*, the first joint short; second and third obconical, the former more elongate, the latter about as wide as long; terminal joint elongate, pointed. The prosternum is rather short before the coxæ, the front and middle coxæ contiguous. Tarsi distinctly narrower than in *Oligomerus*, the first joint as long as the next three or very nearly so, second joint equal to the third and fourth united, the latter short and feebly or scarcely emarginate at apex; last joint about twice as long as wide, moderately dilated apically. The pubescence is very short, moderately inclined; the elytra feebly striate-punctate. First, second and fifth ventral segments nearly equal, third and fourth subequal but a little shorter.

The only other genera in this tribe having somewhat similar antennæ are *Trypopitys* and *Colposternus*, but they are not otherwise allied very closely, the front and middle coxæ being widely separated and the metasternum excavated in front. *Euceratocerus* is, however, very closely related in most respects, except antennal formation; indeed, the three species for which the present genus is established were referred by Casey to that genus.

As only a single species is known to me the following table is necessarily based on Casey's descriptions:

Pleural sulcus below the humeri deep and strongly marked; eyes separated by more than three times their own width ..... 1. **pleuralis.**

Pleural sulcus narrow and feeble.

Elytra fully twice as long as wide; eyes small, separated by fully four times their own width .....2. **macer.**

Elytra much shorter, three-fourths longer than wide; eyes more convex and better developed, separated by three times their own width. 3. **saginatus.**

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1. **A. pleuralis** Casey.—Elongate, parallel, moderately convex, piceous brown, antennæ and feet paler; pubescence very fine, short, moderately inclined, not obscuring the surface color. Head distinctly narrower than the prothorax, eyes moderate; antennæ (fig. 28) scarcely half the length of the body; second joint short, oval, third to tenth elongate-triangular, varying from one and one-half to two and one-half times as long as wide; increasing slightly in length outwardly and evidently more slender in the male; surface rather dull, moderately closely punctate. Prothorax transverse, sides feebly arcuate and a little convergent toward the front; margin narrow and finely serrulate, front angles distinct and nearly right, hind angles broadly rounded; surface smooth, without punctures but numerously granulate; median line impressed in front, obviously but not strongly compresso-carinate behind. Elytra not wider than the prothorax and four times as long; feebly punctate-striate, the punctures becoming obsolete near the apex. Beneath finely punctate and pubescent. Length 3-5.2 mm.

California (Santa Cruz Mts., Pomona and Pasadena), occurring in the spring on live oaks.

The sexual differences appear to be confined to the slightly longer, male antennæ.

The above description was written before discovering that what is undoubtedly the same species had been previously described by Casey under *Euceratocerus*. I have substituted Casey's name and will let the description stand. Since *macer* and *saginatus* are unknown to me, I can only transcribe the original descriptions and also add that of *pleuralis* for purposes of comparison. It is more than likely that the three names cover only a single species.

"**Euceratocerus pleuralis**" Casey.—"Pleural sulcus below the humeri deep and strongly marked; elytra twice as long as wide; eyes separated by evidently more than three times their own width. Body rather stout, the elytra subdilated near the tip, blackish piceous above, the legs and antennæ dark rufous or rufopiceous; surface feebly shining, the pubescence extremely short, pale, dense and conspicuous on the elytra. Head short, inserted to the eyes, dull, the epistomal impression well marked. Prothorax three-fifths wider than long, rounded at apex, the sides thence strongly diverging and feebly sinuate, becoming parallel and broadly rounded in basal half; basal angles rounded. Elytra twice as long as wide, more than three times as long as the prothorax and fully as wide, a little wider at apical third; humeral angles rounded. Length 3.7-4.5 mm.; width 1.3-1.7 mm.

"California—Santa Cruz Mts."

2. **A. macer** Casey.—"Elytra fully twice as long as wide; eyes small, separated by fully four times their own width. Body very slender, nearly as in *pleuralis* but narrower, the elytra not distinctly wider behind and fully three and one-half times as long as the prothorax, the latter nearly similar in outline but still more transverse, the sides becoming parallel in less than basal half, with the median line similarly finely impressed anteriorly. Length 2.9 mm.; width 1.0 mm.

"California—locality not indicated."

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3. **A. saginatus** Casey.—"Elytra much shorter, three-fourths longer than wide; eyes more convex and better developed, separated by three times their own width. Body suboblong, moderately convex, dull, blackish, almost similar throughout to *pleuralis* but shorter, the prothorax relatively rather smaller and the elytra much shorter, not distinctly dilated subapically, and with the minute subgranuliform rugulosity still finer, and the pubescence a little denser, the fine striæ distinct to summit of the convex declivity. The hind tarsi are longer than in *pleuralis*. Length 3.4 mm.; width 1.25 mm.

"California—locality not indicated."

EUCERATOCERUS LeConte.

Elongate, cylindrical, a little depressed, clothed with very short, fine grayish pubescence; elytra finely and feebly striate-punctate. Terminal joint of palpi elongate, pointed, a little dilated at middle. Antennæ pectinate in the male, serrato-pectinate in the female. In other respects and indeed in some of those mentioned above this genus is substantially identical with *Actenobium*. The basal joint of tarsi and the first ventral segment are a trifle shorter in *Eucera-tocerus*, but the difference is not very noticeable.

1. **E. hornii** Lec.—Elongate, parallel, piceous brown, antennæ and feet only slightly paler; pubescence very short, moderately plentiful but not dense. "Antennæ (♂, fig. 29) longer than half the body, the first joint nearly as long as the third, second small, third and following subequal, about three times as long as wide, each with an oblique basal process longer [than] and as broad as the joint itself, except that of the second, which is shorter and broader." Head and prothorax finely subgranulate and dull, the latter as wide as or slightly wider than the elytra at base, disk a little more prominent at middle posteriorly; sides distinctly but not widely margined, the margin finely serrulato-crenulate, hind angles quite broadly rounded. Elytra with fine, feebly punctate striæ. Tarsi slender and as long as or slightly longer than the tibiæ. Length 4 mm.

Texas. Type collected by Belfrage.

With the type in the LeConte collection is a second specimen—evidently a female—which differs from the male type in being entirely black, the antennæ and feet not paler; prothorax with narrower side margin which is scarcely or very feebly crenulate; the hind angles less broadly rounded, thus giving the thorax a more quadrate appearance; tarsi apparently less slender, the second joint more evidently shorter than the first, the whole tarsus barely as long as the tibia. This second specimen is mounted in typical Belfrage style and is doubtless from the same source as the type. It seems best therefore to regard the two as sexes of the same species at least for the present.

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A male specimen collected near Cincinnati by Mr. Dury is closely allied to the black female above mentioned, but the prothorax is somewhat smaller and shorter relatively to the elytra, the color dark brown, the antennæ pale. It is quite likely distinct, but I am unwilling to describe it without seeing both sexes.

XERANOBIUM new genus.

Elongate, subcylindrical insects, of large size for the group, densely clothed with ashy-gray recumbent hair. The terminal joint of both maxillary and labial palpi is elongate fusiform, not wider than the penultimate, the latter nearly as wide as long in the maxillary, but slender and as long as the terminal joint in the labial palpi. Antennæ rather short, less than half the length of the body, the three outer joints elongate, the stem distinctly serrate or pectinate. Prothorax nearly equal in width to the elytra, the hind angles rounded and undefined, side margin acute posteriorly, completely obliterated in front. Elytra confusedly punctate or finely scabrous. Front and middle coxæ contiguous, the prosternum long before the coxæ; ventral segments 1, 2 and 5 subequal; 3 and 4 a little shorter, the fourth slightly shorter than the third. Tarsi slender, the third and fourth joints not emarginate, fifth joint elongate, linear, claws with a small but evident subbasal angulation.

The four species included in this genus inhabit the dryer regions of the southwestern parts of our country. None of them are as yet surely known in both sexes, and therefore the antennal structure cannot be completely defined.

First joint of hind tarsi fully one-third longer than the second, fourth joint twice as long as wide; form more slender.
- Sides of prothorax parallel as viewed from above; head (♂) a little wider than the prothorax, antennal stem strongly ramose.....1. **laticeps.**
- Sides of prothorax rather strongly rounded, widest near the middle, head (♀) subequal in width to the prothorax.....2. **macrum.**

First joint of hind tarsi only slightly longer than the second, fourth joint but little longer than wide; form more robust; head (♀) very distinctly narrower than the prothorax.
- Elytra vaguely quadricostate; size larger.....3. **cinereum.**
- Elytra not at all costate; size smaller.....4. **desertum.**

1. **X. laticeps** n. sp.—Cylindrical, feebly depressed, brown; body throughout and legs clothed with dense, short, closely appressed cinereous hair. Head large, the eyes very large and more prominent than the sides of the prothorax; front finely scabrous, with scattered punctures, and one and one-half times as wide

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as the vertical diameter of the eye. First joint of antennæ (fig. 23) moderately stout; second short, angulate internally; third to eighth ramose, the processes increasing in length from the third to the sixth joint, that of the latter being about double that of the third joint, and subequal in length to the ninth; ninth joint about as long as the five preceding united, the apical angle acute; tenth similar to, but slightly shorter than the ninth; eleventh a little longer and very slender. Prothorax three-fourths as long as wide, sides nearly straight and parallel as viewed from above; base truncate, feebly subsinuate each side; apex moderately arcuate; side margin obliterated anteriorly; surface finely punctulate and with scattered coarser punctures. Elytra equal in width to the prothorax and a little more than three times as long; finely scabrous apparently, but the sculpture is almost perfectly concealed by the pubescence, and with faint traces of longitudinal sulci. Prosternum longer before the coxæ than the longitudinal diameter of the latter. Last ventral segment rather broadly evenly rounded at apex. Length 6.5 mm.

Tucson, Arizona (Hubbard and Schwarz).

The type and only specimen is a male in the National Museum collection.

2. **X. macrum** n. sp.—Similar to the preceding, but with the elytra relatively more elongate, four times as long as the prothorax and more distinctly subsulcate. The head is subequal in width to the prothorax, the front a little less than twice as wide as the vertical diameter of the eye; prothorax three-fourths as long as wide, with distinctly arcuate sides. The antennæ (fig. 21) are about two-fifths as long as the body, the three outer joints forming about half its length. First joint stout, second much smaller but longer than wide, third longer than the second and feebly prominent internally, fourth to eighth serrate, the fourth and eighth evidently longer than wide, fifth to seventh as wide as long; ninth equal in length to the three preceding together, tenth similar to the ninth but just visibly shorter, eleventh slightly longer and narrower. As in *laticeps* the prosternum is very long before the coxæ. Last ventral evenly rounded at apex. Length 7.75 mm.

California (Riverside).

The unique type is a female taken by me at electric light in June.

3. **X. cinereum** Horn.—Similar in form and vestiture to *desertum*. Head a little narrower than the thorax. Joints 3-8 of antennæ (fig. 24) pectinate, the processes subequal in length to the joints. Elytra vaguely quadricostate. Last ventral segment broadly feebly emarginate from side to side. Length 9 mm.

This species was described from a unique taken in "Southwestern Texas near the Rio Grande." It was referred by its author to *Ctenobium*, doubtless because of the pectinate antennæ, but the description, while somewhat unsatisfactory, pointed toward the present genus, and inquiries kindly answered by Dr. Skinner and a subsequent examination of the type by myself verified this conclusion.

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The relation of *cinereum* to its congeners is, however, still problematical. If the specimen be really a male as supposed by Horn, and the pectinate antennæ would seem to indicate this, then it is perhaps identical with *desertum*, all known examples of which are apparently females. All these latter are, however, considerably smaller than the Texas male, and are known from the California deserts. They show scarcely a trace of the evident though vague elytral costæ of *cinereum*. If, on the other hand, the type of *cinereum* be a female it must be that of *laticeps*—if of any here made known, the pectination of the antennæ of the latter being much longer. The emarginate last ventral of *cinereum* is of doubtful signification. Usually this is a male character, but in *laticeps*, which is unquestionably a male, this segment is evenly rounded behind, and moreover the last ventral of *cinereum* is fringed internally with capitate hairs, very similar in structure to those which I have previously referred to* in the females of *Chalcolepidius*, *Tragidion*, etc. A character of this sort would be expected to prevail throughout a genus, but there is no trace of such hairs in other females of *Xeranobium*. In view of these uncertainties I have thought best that each of these forms should stand with a name of its own, until fresh material of both sexes shall enable us to solve the puzzle.

4. **X. desertum** n. sp.—Similar in color and vestiture to *laticeps* and *macrum*, but evidently more robust than either. The antennæ (fig. 22) are rather shorter than in *macrum*, being scarcely more than one-third as long as the body, but are similar in structure. The head is distinctly narrower than the prothorax, the front twice as wide as the longest diameter of the eye. The prothorax is relatively wider than in the two preceding species, being approximately two-thirds as long as wide, with the sides moderately rounded, the base and apex subequal in width. Elytra slightly more than three times as long as wide, the sutural margins divaricate from apical fourth or fifth; surface throughout apparently finely scabrous and dull, the head with minute scattered polished granules. The prosternum is not so long before the coxæ as in the two preceding species, the length being scarcely greater than the thickness of the coxa. Last ventral segment very broadly but evenly rounded at tip. Length 7-7.5 mm.

California, Salton, two females (Hubbard); Mojave, one female; Needles, one female (Wickham).

The Salton specimens, which are to be regarded as types, were bred from stems of *Allenrolfea occidentalis* sent to Washington by Mr. Hubbard. Mr. Schwarz refers them† to *Ctenobium cinereum*

* Ent. News, IX, p. 239, Dec. 1898.

† Proc. Wash. Ent. Soc., IV, p. 377.

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Horn, but I have already given reasons for doubting the accuracy of this reference.

The Mojave and Needles examples are probably identical with the Salton ones, but they show certain small differences which may indicate a distinct though very closely allied species. In them the antennal stem is rather less distinctly serrate and the club is a little narrower; the elytra are also scarcely divaricate at apex. In the Needles specimen there are very faint indications of elytral sulci, but there is not the slightest indication of these in the others.

OLIGOMERODES new genus.

This genus is established with some reluctance for two species lying between *Xeranobium* and *Oligomerus*, the homogeneity of neither of which I am willing to disturb by the introduction of the species in question. From *Xeranobium* the present genus is distinguished by the entire prothoracic side margin, the slightly (*occidentalis*) or distinctly (*catalinæ*) emarginate fourth tarsal joint, the feebly serrate antennal stem, the compressed terminal palpal joint with more strongly rounded interior margin, the relatively shorter and narrower penultimate joint of the labial palpi, the more or less evident elytral striæ, and the much less dense pubescence. From *Oligomerus* it differs notably in the more slender tarsi, the third joint not at all emarginate, the terminal joint narrow and elongate, and in the approximate middle coxæ. The two species resemble the larger more elongate species of *Xyletinus*. They differ considerably from each other in antennal and tarsal formation and may thus be readily separated:

Intermediate joints of antennæ elongate, the ninth barely as long as the two preceding united in either sex, the three outer joints together much shorter than 1-8 united; basal joint of hind tarsi equal to the next two, fourth joint slightly emarginate; elytral striæ distinctly punctured ..... 1. **occidentalis.**

Intermediate joints of antennæ much smaller, the ninth evidently longer than the two preceding united in the ♀, and as long as the five preceding in the ♂; three outer joints as long as (♀) or much longer (♂) than 1-8 united; basal joint of hind tarsi as long as the next three, fourth joint rather deeply emarginate or bilobed; elytral striæ feebly or scarcely punctured ..... 2. **catalinæ.**

1. **O. occidentalis** n. sp.—Cylindrical, a little depressed, brown; pubescence short, appressed, ashy in color, plentiful, but not concealing the surface sculpture. Head not visible from above in repose, three-fourths as wide as the

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prothorax, with the front a little more than twice as wide as the vertical diameter of the eye in the female; but little narrower than the prothorax, with the front less than twice as wide as the vertical diameter of the eye in the male. Antennæ (fig. 25) in the female less than half the length of the body; joints 3-8 rather feebly serrate, all longer than wide, the fourth, sixth and eighth a little more elongate than their fellows; the eighth longest and about three times as long as wide; 9-11 each about one-third longer than the eighth and together much shorter than 1-8 combined. In the male the antennæ are half as long as the body, joints 3-8 a little longer than in the female, but preserving the same relative lengths; ninth joint almost twice as long as the eighth; tenth and eleventh subequal in length, but more slender. Prothorax as wide as the elytra, about two-thirds as long as wide, sides very feebly convergent anteriorly, side margin narrow but entire, front angles right, hind angles undefined, the sides rounding into the base. Elytra nearly four times as long as the prothorax and more than twice as long as wide. Entire surface finely densely punctulate, the head with sparse coarser punctures, which are replaced by small granules posteriorly; prothorax with numerous minute scattered polished granules; elytra feebly striate, the striæ finely punctate. Prosternum before the coxæ as long as the thickness of the coxa. Fifth ventral segment rounded at apex in both sexes. Length 5¾–6 mm.

California. Yuba and San Luis Obispo Counties (Fuchs); Pasadena (Fenyes); Los Angeles County (Koebele); Poway, San Diego County (Blaisdell).

2. **O. catalinæ** n. sp.—Closely similar to the preceding species in size, form and color, but with the pubescence less abundant and more condensed along the interspaces of the elytra, which appear vittate in consequence, though not very conspicuously so. Front very little wider than the vertical diameter of the eye in the male, but nearly or quite twice as wide in the female. The intermediate antennal joints (fig. 26) are shorter than in *occidentalis*, 4-8 being each sensibly as wide as long; 9-11 linear and very elongate in the male, the ninth as long as the five preceding, the three together much longer than 1-8. In the female (fig. 27) the ninth joint is a little longer than 7 and 8 combined, and as usual of broader form than in the male. The sculpture is substantially as in *occidentalis*, except that the elytral striæ or sulci are still more feebly punctured, in some specimens scarcely visibly so, except near the margin. Length 4.7–5.8 mm.

California, Santa Catalina Island.

This species occurred in some numbers in July, by beating the branches and foliage of *Heteromeles arbutifolia* on the hills back of Avalon. I have not thus far seen it in any other collection.

OLIGOMERUS Redtenbacher.

Body elongate, cylindrical, slightly depressed, with rather sparse or moderately abundant pubescence, intermixed in some species with very short erect hairs. Head rather strongly deflexed; eyes round, moderate in size, larger as usual in the male. Palpi with

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terminal joint elongate-oval or subfusiform; pointed, feebly compressed; penultimate joint of maxillary palpus short, subtriangular, nearly as wide as long; of labial palpus more slender, feebly widened externally. Antennæ 9 , 10-, or 11 jointed, the stem not at all serrate, the three or four joints preceding the club very short; last three joints much wider and together longer than all the preceding, longer and relatively narrower in the male. Prothorax with entire side margin, which is finely somewhat irregularly serrate; front angles distinct, nearly right; hind angles broadly rounded and ill defined; disk more or less elevated posteriorly, the elevation usually somewhat compressed laterally. Surface of head and thorax finely granulate; elytra punctate-striate, the lines of punctures sometimes a little irregular. Prosternum scarcely as long before the coxæ as the coxal diameter, the coxæ usually contiguous or nearly so, the intercoxal process acute, becoming laminate posteriorly except in *sericans* and *tenellus*, in which it is wider and the coxæ not contiguous. Middle coxæ narrowly but evidently separated. First, third and fourth ventral segments nearly equal and shorter than the second and fifth. Basal joint of tarsi subequal to the three following; third and fourth joints emarginate above for the insertion of the joint following, except in *tenellus*, in which the fourth only is very feebly emarginate.

The relation of *Oligomerus* to allied genera is sufficiently well indicated in the table of genera. The number of antennal joints does not here constitute a generic character, unless the instability itself be so considered; in fact the number seems to vary individually in one species (*obtusus*). In a series of twenty-three specimens not otherwise separable, ten have the antennæ 11-jointed, twelve have them 10-jointed, and in the remaining example one antenna is 10- and the other 11 jointed. In the 10-jointed antenna the fourth joint is about equal in length to the third, and usually shows a more or less evident constriction or impression, and in some examples this pseudo division is so distinct that it is very difficult to say whether the organ contains ten or eleven joints. When the division is complete the fourth joint is left evidently shorter than the third. In those species with 9 jointed antennæ I have observed no tendency to variation, though it may possibly occur, nor does there appear to be any in *sericans*. Of the two European species *brunneus* has 10-jointed and *reyi* 11-jointed antennæ. I do not know whether any

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individual variation in the number of joints has been observed in these species.

Our species of *Oligomerus* seem as a rule to be rather rare, and few collections contain all told more than half a dozen specimens. In the LeConte collection there are 5 *sericans*, 2 *obtusus*, 1 *alternans* and 1 *brevipilis:* in the Horn collection 2 *sericans*, 1 *obtusus* and 2 *alternans*. Mr. Blanchard writes me that he has 2 *sericans* and 4 *alternans*, all taken about thirty years ago. The Hubbard and Schwarz collection contains all the species, but in the material sent me there are only twelve examples, a number, however, greater than any other collection offers. The material before me numbers between sixty and seventy specimens, in which six species seem to be clearly indicated. Of these, *sericans* and *tenellus* are evidently aberrant. The species may be distinguished as follows:

Front coxæ distinctly separated, intercoxal process wider, not laminate posteriorly.

Antennæ 9-jointed, disk of prothorax distinctly gibbous, pubescence entirely reclinate ..... 1. **tenellus.**

Antennæ 10-jointed, disk of prothorax scarcely gibbous, pubescence of head and thorax erect ..... 2. **sericans.**

Front coxæ contiguous or virtually so, intercoxal process laminiform posteriorly, disk of prothorax more or less distinctly gibbous.

Antennæ 10-jointed, pubescence short, sparse and perfectly recumbent; elytral striæ finely punctate; intermediate joints of antennæ distinctly longer than wide, ninth joint a little longer than the three preceding in the female ..... 3. **californicus.**

Antennæ 10- or 11-jointed; pubescence entirely recumbent without trace of erect hairs; elytral striæ more coarsely punctate; intermediate joints of antennæ very short and transverse, the ninth joint equal to the five preceding in the female ..... 4. **obtusus.**

Antennæ 9-jointed.

Recumbent pubescence of upper surface with intermixed short erect hairs. 5. **brevipilis.**

Surface without evident erect hairs; alternate elytral interspaces more elevated in typical examples, but frequently scarcely at all so. 6. **alternans.**

1. **O. tenellus** n. sp.—Very elongate, moderately depressed, red-brown, pubescence very short, reclinate. Antennæ 9-jointed, joints 2 and 3 subequal, narrower than the first and nearly two-thirds as long; 4–6 subequal, a little shorter, and more slender than 3, all distinctly longer than wide; 7 and 8 similar, each very slender and nearly as long as the five preceding, 9 longer, filiform. Front slightly less than twice as wide as the vertical diameter of the eye. Prothorax similar in form and sculpture to *obtusus*, the disk distinctly gibbous. Elytra four times as long as the prothorax, fully two and one-fourth times as long as wide; very feebly striate punctate. Prosternum before the coxæ but

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little more than half as long as the longitudinal thickness of the latter. Tarsi slender, the first joint equal to or slightly longer than the next two; third joint not at all, fourth very feebly emarginate at tip. Length 2.8 mm.

Williams, Arizona, July 22nd; collected by Barber and Schwarz. A single specimen, probably a male, is all I have seen of this neat little species. It differs from typical *Oligomerus* in its more slender tarsi with third and fourth joints not or scarcely emarginate and in its distinctly separated front coxæ, but it agrees nearly with *sericans* in this latter respect.

2. **O. sericans** Melsh.—Piceous brown, head and thorax shining with small scattered granules; elytra finely scabrous, punctate-striate, the inner rows of punctures irregular and more feebly impressed, a few minute granules in the basal region. Head and prothorax with short erect fuscous hair, elytra similarly clothed, but the hairs distinctly inclined. Vertical diameter of eye a little greater than half the width of the front in the ♂, less than half the width of the front in the ♀. Antennæ scarcely half the length of the body, first joint elongate, not much thickened, a little bent; second oval or elliptical, about half as long as the first and narrower; third and fourth still shorter, subequal or with the third a little longer; fifth to seventh similar to each other, very short, transverse; eighth to tenth about equal in length, twice as wide as the preceding and each as long as 2-7 united in the ♀, still longer and more parallel in the ♂. Beneath finely punctate and pubescent. Length 3-4.5 mm.

Massachusetts, New York, Pennsylvania, District of Columbia, Virginia, Ohio, Kentucky, Michigan, Minnesota, "Canada."

Two examples in the LeConte collection are labelled "June 24 Carya" and "June 24 White Oak."

3. **O. californicus** n. sp.—Slender, subcylindrical, brown; antennæ slender, all the joints longer than wide; second, third and fourth subequal in length, the second a little stouter; sixth a little shorter; fifth and seventh again slightly shorter and subequal; ninth joint a little longer than the three preceding, elongate-triangular, the apical angle obtuse. Prothorax rather strongly elevated and compressed posteriorly, a feeble channel from the summit of the elevation to the front margin; surface finely granulate. Elytra not wider than the prothorax, feebly striate, the striæ finely punctate, the rows of punctures somewhat irregular near the suture. First joint of tarsi as long as the next three, fourth very feebly, third scarcely at all emarginate at tip. Length 4 mm.

California (Sisson).

Described from a single female specimen in the Hubbard and Schwarz collection.

This is the only species thus far discovered in the true Pacific Coast region. In its slender antennal stem and almost unemarginate fourth tarsal joint it agrees with the Arizonan *tenellus*.

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4. **O. obtusus** Lec.—Elongate, usually red-brown, but sometimes darker, pubescence recumbent. Head and prothorax more thickly granulate than in *sericans*, thoracic disk moderately gibbous. Elytral striæ regular or very nearly so. Front only about one-third wider than the vertical diameter of the eye in the female. Ninth joint of antennæ equal to the five preceding in the female, nearly as long as all preceding in the male. Length 4.8-7.2 mm.

The following localities are represented in the material at hand or are reported on good authority: Eastern Massachusetts, Vermont (type), New York (Staten Island, Long Island, Albany, Buffalo); Pennsylvania (Manayunk); New Jersey; District of Columbia; Canada (Toronto); Mich. (Grand Ledge); Ohio (Cincinnati).

This appears to be the species most often taken by collectors. It resembles considerably the larger specimens of the more common *Hadrobregmus carinatus*, but is rather stouter with larger thorax, and may of course be distinguished at once by the approximate front coxæ.

5. **O. brevipilis** n. sp.—Dark brown, upper surface with very short erect hairs which are numerous on the head and thorax, sparser on the elytra, and only distinctly visible when viewed in profile. Antennæ 9-jointed, joints 2-6 decreasing in length, the second scarcely half as long as the first; the sixth very small, narrower than the fifth and evidently transverse; seventh joint (♀) not quite as long as the five preceding, scarcely more than twice as long as wide, its inner margin rather strongly arcuate. Front rather more than twice as wide as the vertical diameter of the eye. Otherwise nearly as in *obtusus* and *alternans*. Length 5-6.75 mm.

Anglesea, New Jersey; Washington, D. C.; Ft. Pendleton, West Virginia; Michigan.

Single examples from each of the above localities are before me. Unfortunately all are females, but I have no hesitation in separating it from *alternans* to which it is most closely related, because of the erect hairs of the upper surface, the smaller eyes and wider front, and the shorter and wider seventh antennal joint when compared with the same sex of *alternans*.

6. **O. alternans** Lec.—Blackish brown, occasionally paler, upper surface without erect hairs, alternate elytral intervals in typical examples more convex, but this character is evanescent and totally fails in some examples which are not otherwise separable. Disk of prothorax a little more strongly elevated and more compressed than in our other species. Eyes of female larger than in *brevipilis*, the front less than twice as wide as the vertical diameter of the eye; eyes still larger in the male. Sixth joint of antennæ not obviously narrower than the fifth; ninth joint (♀) nearly three times as long as wide, as long as the five preceding, the inner margin straighter than in *brevipilis*. Otherwise nearly as in *brevipilis*. Lenth 4.4-6 mm.

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The following localities are represented in the specimens at hand: New Jersey; Pennsylvania; Canada; Washington, D. C.; Kansas (Onaga). It is recorded from Pittsburg and Cincinnati by Hamilton and Dury respectively. "Mass." (Blanchard).

One example from Grand Ledge, Mich. (Hubbard and Schwarz), is small, red-brown, and very different in appearance from typical *alternans*, but the gap is so nearly filled by intermediates that I have not thought it safe to separate it without further evidence.

SITODREPA Thomson.

Oblong, moderately robust, pubescence rather long and somewhat bristling. Head much narrower than the prothorax, eyes only moderate in size and not very strongly convex, the front more than twice as wide as their vertical diameter. Last joint of maxillary palpi moderately elongate, gradually dilated apically and obliqely truncate, preceding joints small and narrow; last joint of labial palpi broadly triangular, the apex nearly squarely truncate and slightly sinuate. Antennæ less than half as long as the body, 11 jointed, first joint elongate, but rather stout, second similar but much smaller, third to eighth small, third, fifth and seventh evidently larger than the fourth, sixth and eighth; ninth about equal to the five preceding and rather more than twice as wide, tenth and eleventh subequal in length and width to the ninth; the three united much longer than all the preceding. Prothorax as wide as the elytra, the latter finely striate, striæ finely punctate. Prosternum rather short before the coxæ, which are distinctly separated by the triangular intercoxal process; middle coxæ separated. First, third and fourth ventral segments subequal, second longer, fifth still longer and nearly equal to the third and fourth united. First tarsal joint subequal to the next two, fifth joint stout, a little longer than wide, but not narrower at base. The tibial spurs are very small and difficult to see.

This genus contains only the cosmopolitan *panicea*, which has been everywhere diffused in various organic commercial products, both animal and vegetable. It is so well known as to need only a brief description.

1. **S. panicea** Linn.—Reddish brown, with abundant rather long and somewhat bristling pubescence. Prothorax a little narrowed from the base, side margin narrow in front, slightly explanate posteriorly, finely serrate; front angles somewhat rounded, hind angles broadly rounded, disk scarcely elevated poste-

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riorly, surface sparsely granulate. Elytra finely punctate-striate; intervals with a single line of punctures bearing slightly longer and more erect hairs. Length 2.4-3.7 mm.

Occurs everywhere in our territory.

GASTRALLUS Duval.

Form subcylindrical, feebly depressed; head not visible from above, received in an excavation of the prothorax. Eyes rather small, widely separated. Antennæ 9-jointed in our species, 10-jointed in the European species; first joint elongate oval, second similar but smaller, third to fifth smaller and nearly as wide as long, their inner margins not produced; sixth joint smallest, seventh and eighth elongate-triangular, ninth still longer, narrowly oval, pointed. Terminal joint of maxillary palpi elongate, a little narrowed apically, the tip truncate; last joint of labial palpi triangular, nearly equilateral. Prothoracic side margin obliterated, except toward the base. Elytra not wider than the thorax at base, a single fine marginal stria, punctuation confused. Front and middle coxæ widely separated, the prosternal process deeply sunk between the coxæ. Metasternum oblique, broadly but not deeply longitudinally sulcate. Metasternum not produced anteriorly. First and second ventral segments connate, the first longer than the second at the middle but shorter than it at the sides; third, fourth and fifth segments shorter, increasing in length. Legs slender, the tarsi two thirds to three-fourths as long as the tibiæ.

A single species occurs in our fauna. It was described from Colorado, and has recently been taken in California.

1. **G. marginipennis** Lec.—Piceous brown, finely pubescent, legs and antennæ pale. Finely punctulate throughout, the pronotum and elytra with numerous scattered larger punctures. These punctures are nearly wanting at the anterior part of the pronotal disk, and are more conspicuous toward the elytral base, though evident over the whole surface. The prothorax is moderately narrowed anteriorly, the disk evenly convex; the side margin is sharply defined and subexplanate posteriorly, but is completely obliterated before the middle; the hind angles rounded but somewhat defined. Elytra with a fine marginal stria which is not obviously punctate. Length 1.9-2.4 mm.

Colorado (Garland), California (Pomona, Pasadena).

I am unable to detect any difference between the Colorado specimens and those from California. In the latter State it occurs on oak in June and July, but is not plentiful. Two species of this genus—*immarginatus* and *lævigatus*—occur in Southern Europe. In both the antennæ are 10-jointed.

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CTENOBIUM LeConte.

Body slender, cylindrical, prothorax deeply excavated beneath for the reception of the head, which is received in repose upon the anterior coxæ. Antennæ 11 jointed, first joint thicker, nearly cylindrical; second smaller and shorter; third equal in length to the second, triangular, about as broad as its length in the female; fourth to eighth transverse, with the outer angle acutely prolonged in the female, the fifth and seventh more prolonged than the others. In the male the third to eighth joints are prolonged externally into a cylindrical branch twice as long as the joint itself; the ninth and tenth joints are compressed, elongate-triangular, each longer than the two preceding; the eleventh joint is elongate oval and compressed; ninth to eleventh joints united, nearly as long as all the preceding joints. Prosternum rather short before the coxæ, which are distinctly separated by the prosternal process, the latter parallel between the coxæ then suddenly acuminate at tip. Middle coxæ narrowly but clearly separated by the meso- and metasternal processes. Metasternum deeply channeled behind; hind coxal plates narrow, nearly parallel, not dilated inward. Tibiæ slender, not compressed; tarsi longer than the tibiæ, narrow, first joint elongate, last joint short, dilated; claws slender. Abdominal segments free, one to four subequal, fifth nearly as long as the third and fourth together, the tip conical and prominent in both sexes. Last joint of both maxillary and labial palpi moderately elongate and obtusely subtruncate at tip.

The above diagnosis with some slight additions and corrections is a transcription of LeConte's original description. One species only is known. It bears a rather strong resemblance to certain species of *Hadrobregmus* and *Oligomerus*, but is at once distinguished by its antennal and abdominal formation.

The *Ctenobium cinereum* of Horn is not congeneric with *antennatum*; for it and several other closely allied forms the genus *Xeranobium* has been established—see page 159.

1. **C. antennatum** Lec.—Cylindrical, brown, with sparse, fine, very short recumbent pubescence. Head (♂) nearly as wide as the prothorax; eyes large, the front but little wider than their vertical diameter. Prothorax scarcely as wide as the elytra, side margin narrow, feebly subserrate, front angles nearly right, hind angles not defined, disk subconically elevated at middle, the elevation divided by a feeble longitudinal channel. Elytra striate, striæ punctate,

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the outer rows regular and more deeply impressed, the sutural ones confused. The first tarsal joint is equal in length to the next three; the fourth joint is deeply emarginate above for the reception of the fifth, the third less deeply so. Length 5–6 mm.

Virginia. The only specimen before me is a male from the Hubbard and Schwarz collection. LeConte's types were also from Virginia.

PTINODES LeConte.

This genus was established by LeConte for a species taken by himself at San Diego, California, the unique type of which has never to my knowledge been duplicated. The insect looks much like a small somewhat aberrant *Trichodesma*, and except for the dark discal area of *beyeri*, the similarity to small examples of the latter is rather marked. I give below the original diagnosis of LeConte:

"Body elongate, convex, pubescent and clothed with long erect hairs. Prothorax excavated beneath for the reception of the head, disk gibbous, not channeled. Eyes convex, moderate in size, prominent. Antennæ rather stout, joints 3–8 nearly equal, the outer ones slightly transverse; ninth and tenth each longer than the three preceding, and somewhat wider, oblong; eleventh a little longer, oval; the ninth to eleventh somewhat longer than all the preceding united. Prothorax narrowed behind, not contiguous to the trunk; prosternum obtusely truncate behind, separating widely the anterior coxæ, which are conical and prominent; middle coxæ prominent, well separated by the mesosternum, which is truncate (?) behind; metasternum not sulcate; hind coxæ with the plates very narrow, scarcely visible. Abdomen with the ventral segments smooth, sparsely hairy, not connate, the fourth shorter than the others, which are equal. Thighs strongly clavate; tibiæ not compressed, with external rows of long hairs; tarsi shorter than the tibiæ, stout, first joint very slightly elongated, fifth joint dilated, claws broadly dilated at base."

Dismissing LeConte's remark concerning the contiguity of the prothorax to the trunk as of really no significance, an analysis of the above description shows very little on which to base a separation from *Trichodesma;* but for the present it seems best to retain the genus, depending upon the somewhat more strongly clavate femora; the ventral segments of more uniform length, except the fourth; and the narrower hind coxal plates. I have observed also that the antennal club is relatively longer than in *Trichodesma.*

The following brief description was made of the type during a recent visit to the Cambridge Museum:

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1. **P. setifer** Lec.—Robust, parallel, brown; body throughout clothed with confused luteous pubescence, somewhat denser on the head and prothorax; entire upper surface and legs with numerous scattered long erect hairs of the same color. Joints 3–8 of antennæ nearly equal in length, but 3, 5 and 7 are slightly larger than 4, 6 and 8. Head with small scattered granules. Prothorax nearly as long as wide, sides straight and parallel, front angles right, hind angles very obtuse and scarcely defined; base oblique at sides, truncate at middle; disk strongly gibbous, the gibbosity not channeled; surface granulate-rugose. Elytra wider than the prothorax, sides parallel, surface polished and with rows of perforate punctures, which are more or less confused on the disk.

The palpi are not clearly visible, but the last joint appears to be elongate fusiform. If this observation is correct, it is a point of importance in support of the validity of the genus.

TRICHODESMA LeConte.

The members of this genus are among the most beautiful of our Ptinides. They are oblong, convex, of moderate or large size, more or less densely pubescent and ornamented with tufts of erect hairs. The terminal joint of the maxillary palpi is elongate-parallel, with the apex broadly squarely truncate and a little emarginate; last joint of labial palpi triangular, the apex broad and feebly emarginate. Antennæ 11-jointed, three outer joints large, elongate and together as long as or somewhat longer than the preceding united; intermediate joints not serrate. Eyes moderate. Prothorax strongly gibbous, narrowed behind, hind angles usually rounded but sometimes defined, surface granulate with small rounded tubercles. Elytra coarsely deeply punctate, the punctures sometimes in rows, sometimes completely confused. Front and middle coxæ widely separated, the prosternum broadly truncate behind. Mesosternal plate broadly concave Ventral segments free, the first short, second longest, third nearly as long as the second; fourth subequal to the first; fifth a little longer than the fourth. Legs stout, thighs feebly clavate; tarsi dilated, the joints gradually increasing in width, the last joint broadly triangular and densely pilose beneath like the others. Claws with a broad rectangular basal tooth. As is usual in the Ptinidæ the eyes are a little larger in the males and the joints of the antennal club are a little more elongate, but these differences are not very conspicuous. This genus is widely distributed over the American Continent and is represented in most parts of our own territory. The number of species known to us has increased notably of late years, chiefly through explorations of the lower Rio

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Grande and Lower California. A single species only—*gibbosum*—was known to LeConte, nor did a second appear till after the publication of the Second Supplement to the Henshaw List. In 1890 Casey described *cristata*, referring it to *Ptinodes;* a not very serious error, as the two genera are separated on rather trifling differences and may yet have to be united. In 1894 Horn added *sordida* (Texas) and *sellata* (Lower California); and in 1903 Schaeffer described *texana* and *pulchella*, both from the vicinity of Brownsville, Texas. Two more species are described in the present paper, one of these known to many of the eastern collectors, most of whom have assumed it to be a form of *gibbosa;* the other a small species brought by Mr. Beyer from Lower California. Our eight species separate quite readily as follows:

Prothorax with sides more or less sinuate posteriorly ..... 3.
Prothorax with sides not sinuate posteriorly ..... 2.
2. Elytral vestiture rather sparse, not concealing the surface; humerus and basal margin, a small median and a subapical spot on each elytron, white; form very robust (California) ..... 1. **cristata.**
Elytral vestiture more abundant but not dense, luteo-cinereous, hairs of thoracic and elytral tufts uniformly blackish brown (Pennsylvania and Kentucky) ..... 2. **klagesi.**
Elytral vestiture relatively dense, especially in a broad whitish submedian fascia; hairs of thoracic and elytral tufts in part fulvous (Eastern United States) ..... 3. **gibbosa.**
Elytra with a common antemedian circular subdenuded spot (Lower California) ..... 4. **beyeri.**
3. Punctures of elytra distinctly serial in arrangement ..... 4.
Punctures of elytra extremely confused throughout ..... 5.
4. Elytra densely clothed with whitish pubescence, except in apical fourth; anterior transverse line of elytral tufts completely obsolete (Texas). 5. **texana.**
Elytra with dark irregular discal space which contrasts strongly with the dense white vestiture of adjacent portions; anterior and posterior transverse series of elytral tufts distinct (Lower California). 6. **sellata.**
Elytral vestiture relatively sparse, each elytron with numerous tufts of short dark brown hair arranged in three longitudinal lines (Texas). 7. **sordida.**
5. Elytral vestiture pale brown, a narrow zigzag median transverse line and the apex pale; each with two discal tufts, one subbasal, the other at apical third (Texas) ..... 8. **pulchella.**

In the following diagnoses I have drawn freely upon the descriptions of Horn and Schaeffer, contenting myself with such additions and modifications as seemed necessary to insure uniformity of treatment.

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1. **T. cristata** Casey.—Very robust, piceous, feebly shining, vestiture not very dense, revealing in great part the surface of the elytra, and the middle third of the pronotum posteriorly. Antennal club subequal in length to all the remainder, joints 3-7 about as wide as long. Prothorax about one-half wider than long, sides arcuately converging to base, the hind angles rounded, disk strongly gibbous, surface granulate, vestiture dense, except as above noted, intermixed throughout with longer fine erect hairs, the sides broadly clothed with whitish matted web-like pubescence; summit of the gibbosity with two approximate tufts of dark brown and fulvous hair, and anterior to these two similar tufts which are slightly less approximate. Elytra one-third wider than the prothorax, sides parallel, humeri narrowly rounded and broadly exposed. Surface with coarse punctures irregularly placed, and numerous lines and patches of small rounded granules; vestiture confusedly variegated with white, brown and black, the humeri, an oblique subsutural median spot, and a subapical spot of denser white hairs. There are two series of four blackish brown tufts of short erect hairs, one beginning at the umbone, extending obliquely backward and then forward to the suture; the other at the apical third, transverse and anteriorly arcuate. Lower surface simply pubescent and rather closely granulate, except the ventral segments, which are simply punctate, except along the outer margins. Legs rather densely pubescent, the femora and tibiæ with numerous long erect hairs. Length 5.2-6.8 mm.

Pacific Coast from Los Angeles County, California to Oregon. This species seems to have been most frequently taken in the Coast Range of Middle California, the majority of specimens examined coming from the Santa Cruz Mountains; it is distinctly more robust than any other species of our fauna and is the only one occurring in the region which it occupies.

2. **T. klagesi** n. sp.—Form and size of *gibbosa*; vestiture more yellowish gray and less dense, especially on the elytral disk where it is obscurely vittate in arrangement. The basal dark area of the elytra is less conspicuous, the posterior series of blackish tufts slightly less apical in position, and both the elytral and thoracic tufts without admixture of fulvous hairs. The intermediate antennal joints seem slightly less elongate, being scarcely longer than wide. Length 5.8-6.4 mm.

Hab.—District of Columbia; Pennsylvania (Manayunk; "Bucks County," Jeannette); Virginia (Penington Gap); Kentucky.

This species has a somewhat limited range, but is apparently not rare. Most eastern collections that I have examined contain one or more examples almost invariably mixed with *gibbosa*. The specimens in the National Museum collection were labeled "n. sp." by Mr. Schwarz, and Mr. Henry Klages of Jeannette, Pennsylvania, has also recognized its specific distinctness in a note in his "Additions to Hamilton's List of the Coleoptera of Southwestern Penn-

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sylvania." Mr. Klages finds this species on hickory trees only, but Mr. Schwarz tells me that he has taken both it and *gibbosa* on hickory and on various other trees as well

It gives me great pleasure to dedicate the species to Mr. Klages, to whom I am indebted for a series of specimens as well as for many courtesies extended at the Carnegie Museum and at his home.

3. **T. gibbosa** Say.—Oblong, moderately robust, densely clothed with grayish white recumbent hairs, except the posterior median portions of the prothorax, and a broad discal posteriorly rounded basal area on the elytra. Antennal club subequal in length to all the preceding joints, the intermediate joints mutually similar and all a little longer than wide. Prothorax evidently narrower than the elytra, sides a little arcuate and convergent posteriorly, hind angles rounded; disk strongly gibbous, surface throughout rather densely granulate, each granule bearing a long fine erect hair, the vestiture otherwise dense and subrecumbent, except as above noted; the summit of the gibbosity with a divided tuft of brown and fulvous hairs, and anterior to these two smaller similar tufts. Elytra with coarse punctures arranged in somewhat irregular rows, and numerous small rounded granules which are more conspicuous at base; vestiture consisting of dense recumbent whitish gray hairs intermixed throughout with long fine erect hairs. The whitish recumbent hairs are, however, nearly lacking in a large basal area which contrasts strongly with the adjacent densely clothed portions, and are also sparser in the apical fourth. Within the dark basal area there are on each elytron two elongate lines or tufts of dark brown and fulvous hairs, one sutural the other parallel to and exterior to the first. At the posterior fourth there is on each elytron a transversely arcuate series of four smaller tufts. Under surface and legs as described of *cristata*. Length 5–6.7 mm.

Widely distributed throughout the Atlantic region and in the Mississippi Valley. The following localities are represented in the material at hand. Massachusetts, New York, Pennsylvania, Ohio, Florida, Canada, Michigan, Indiana, Iowa, Missouri, Louisiana, Kansas.

Dr. Hamilton records the occurrence of this species on elm sprouts.

4. **T. beyeri** n. sp.—Oblong, brown, twice as long as wide; vestiture grayish, with the usual darker erect hairs, moderately dense, but not concealing the surface color of the elytra, the latter with a submedian rounded subdenuded area. Head sparsely punctate and granulate. Antennal club distinctly longer than the preceding joints in both sexes; joints 4–8 about as wide as long, the ninth more parallel and equal to the five preceding in the male, more triangular and a little shorter in the female. Prothorax narrower than the elytra, the sides straight or feebly arcuate and moderately converging behind; hind angles rounded. Surface granulose, summit of gibbosity with four approximate spots of brownish black hair, which is, however, scarcely longer or tufted. Elytra coarsely confusedly punctate, scarcely at all granulate, each with two tufts of blackish hair within and close to the front margin of the denuded area, and a

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series of three or four in a transverse line at the posterior fourth. All elytral tufts are small and easily lost by abrasion, the outer one in the central dark area being most persistent. Sterna granulate as usual, the abdomen very sparsely punctate, not granulate along outer margin. Length 3.5–5.4 mm.

Hab.—Santa Rosa, Lower California.

A small number of specimens collected by Mr. Beyer, to whom I am indebted for this and many other interesting additions to my cabinet, and whose name I am pleased to give to the above species in recognition of the good work done by him in the region named.

5. **T. texana** Schaef.—Oblong, cylindrical, twice as long as wide, with white and fulvous pubescence, intermixed with longer erect hairs. Head dull, with rather densely placed elongate granules, front more distinctly impressed than usual. Antennal club longer than the preceding joints united, intermediate joints as wide as long. Prothorax very nearly equal in width to the elytra, sides arcuate in front, then sinuately narrowing to the hind angles which are usually rather sharply defined though obtuse; surface granulate and densely clothed with whitish and fulvous short recumbent hair, intermixed with longer erect hairs; gibbosity with four small blackish spots, two at the summit and two anterior to these. Elytra regularly striate with coarse, closely placed punctures, base and apex sparsely granulate; vestiture dense and nearly uniformly white to apical fourth, which is more sparsely clothed with fulvous hairs. Anterior tufts of black hairs almost completely wanting, posterior tufts small but obvious, in a transverse line at apical fourth. Beneath densely gray pubescent. Sterna granulate as usual, the ventral segments also granulate over almost their entire surface. Length 4–5 mm.

Specimens are before me from Brownsville, Texas (Schaeffer); Cameron County, Texas (Wickham); Matamoras, Mexico (Nat. Museum collection).

6. **T. sellata** Horn.—Cylindrical, rather more oblong than *gibbosa*, piceous black, densely clothed above with a white matted web-like pubescence, a large saddle-shaped space common to both elytra, of brownish pubescence, the whole surface with intermixed longer erect hairs. Antennæ ferruginous, the club distinctly longer than the preceding joints combined, joints 6-8 evidently smaller than those preceding, ninth as long as third to eighth united in the male. Head densely pubescent and granulate. Thorax broader than long, sides arcuate in front, suddenly sinuately narrowing at the middle, hind angles distinct; disk strongly gibbous, an impressed line, chiefly due to the parting of the pubescence, from the apical margin to the summit of the gibbosity, which is clothed with short stiff brown hair. Elytra a little wider than the thorax at middle, with well-defined series of coarse punctures; very densely pubescent, the surface concealed, except in the dark discal area; each with two transverse series of brownish black brush-like tufts of erect hair, one—three in number—at the basal third, the other at apical third, four in number, but the outer one very small. Body beneath densely pubescent. Sterna and abdominal margin granulate. Length 7 mm.

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Hab.—Lower California, El Taste and Santa Rosa.

I know of only two examples of this beautiful species, the type from the former, and a second specimen collected by Mr. Beyer at the latter locality and kindly sent me for examination.

7. **T. sordida** Horn.—"Cylindrical, oblong, more than twice as long as wide; black, head and thorax with dirty yellow pubescence, elytra with a band of same along the base, a very narrow sinuous band at middle and an irregular apical space of same color. Antennæ black. Head black, punctuation concealed. Thorax broader than long, sides arcuate in front, slightly sinuate in front of the hind angles, the latter distinct, disk gibbous behind the middle, a slight sulcus from the apical margin to the summit of the gibbosity, surface distinctly granulate and not densely clothed with dirty yellowish pubescence and with intermixed, short, black, erect hairs, but without brush at the summit of the gibbosity. Elytra but little wider than the thorax, the surface with irregular striæ of coarse deep, not closely placed punctures, and clothed with velvety black pile arranged in quite small spots; a dirty yellow band composed of spots across the base, a sinuous indistinct band at middle and a space near the apex of similar pubescence. Body beneath black, subopaqe, surface granular, dashed with recumbent dirty yellow pubescence. Length 7.5 mm."

"One specimen, Texas; special locality unknown."

The above is Horn's description. Specimens referred to this species by Mr. Schaeffer, and it seems to me correctly so, have been taken by him at Brownsville, Texas, and one of these is now before me. In it, it should be remarked that the thorax and elytra are of equal width, the latter almost without granulations. The brush-like tufts of blackish hairs are more numerous than in any other of our species, and are arranged in three longitudinal lines on each elytron.

8. **T. pulchella** Schaef.—Oblong, slightly more robust than *gibbosa*, black with very short pale brown recumbent pubescence, intermixed with longer erect hairs; sides of thorax, base of elytra, a narrow strongly dentate median band and apex with denser white pubescence. Antennæ brown, club slightly longer than the preceding joints united (♀), joints 5-8 a little transverse. Head and thorax strongly granulate, the latter transverse, subequal in width to the elytra, widest near the middle, the sides arcuate in front and rather abruptly shortly sinuate behind, hind angles almost rounded; median channel from the front margin to the summit of the gibbosity well marked, the summit clothed with short erect ferruginous hair. Elytra with irregularly closely placed coarse deep punctures but not granulate. Between the angulate median fascia and the apical white space is a white longitudinal streak terminated posteriorly by a small tuft of black hairs. At an equal distance from the suture at basal fourth is a similar tuft, these representing in this species the usual anterior and posterior transverse series. Body beneath black, shining, densely pubescent, abdominal segments remotely punctate and sparsely granulate at sides and apex. Length 5.5–7 mm.

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Esperanza Ranch near Brownsville, Texas.

Two females are at hand, kindly communicated by Mr. Schaeffer, who records taking them on ebony and more rarely on other trees.

NICOBIUM LeConte.

Closely allied to *Trichodesma*, with which it agrees in all essential characters, except as follows: The terminal joint of the maxillary palpi is narrow, elongate, scarcely compressed, and pointed at apex; terminal joint of labial palpi less broadly triangular. The claws are not appendiculate, but merely a little thickened at base. The last ventral segment is longer, segments one, two, three and five being subequal. The vestiture is less dense and not at all tufted.

A single species introduced from Europe is occasionally found in our Southern States.

1. **N. hirtum** Ill.—Oblong, moderately elongate, brown, not very densely clothed with short grayish and brownish recumbent hair, the latter causing the elytra to appear obscurely fasciate; the elytral intervals with a single nearly regular line of slightly longer suberect recurved hairs. Head and antennæ as in *Trichodesma*. Prothorax transverse, nearly as wide as the elytra, sides arcuate and narrowed posteriorly, hind angles indistinct; surface gibbous and closely granulate, a feeble impressed line from the front margin to the summit of the gibbosity. Elytra with regular striæ of rather coarse, closely placed subquadrate punctures. Beneath finely grayish pubescent, sterna granulate, abdomen densely finely punctate, without granules. Legs nearly as in *Trichodesma*, the femora scarcely at all clavate. Length 4–4.6 mm.

All native specimens seen are labeled either Louisiana or Florida.

ANOBIOPSIS new genus.

Oblong, subcylindrical, clothed with rather dense recumbent pubescence with intermixed erect hairs. Mentum transverse trapezoidal. Last joint of maxillary palpi elongate oval, pointed, very little wider than the preceding joints; last joint of labial palpi broadly triangular, the inner side rounded, much wider than preceding joints. Antennæ about two-fifths as long as body, 11-jointed, joints 9–11 subequal to the preceding united, ninth and tenth similar, elongate-triangular, equal in length to sixth to eighth inclusive; eleventh elongate-oval; third joint nearly twice as long as wide, fourth to the eighth each about as wide as long, the fifth slightly wider than the others. Eyes moderate, rather strongly convex. Prothorax strongly gibbous, narrower than the elytra. Elytra with

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scarcely impressed, slightly irregular rows of fine approximate punctures, the intervals much wider than the punctures. Front and middle coxæ widely separated, the prosternum flat and truncate behind; metasternum rather deeply concave in front. Ventral segments free and simply punctate, the extreme margins granulate; first and fourth segments shortest, second longest, third and fifth subequal and intermediate in length; first and second ventral sutures anteriorly arcuate at middle. Femora not clavate, tibiæ rather slender, the outer apical angle acutely produced in the two anterior pairs; tarsi moderate, the first joint nearly twice as long as wide as viewed from above, second joint a little longer than wide, third and fourth as wide as long, fifth longer than wide, moderately dilated; claws simple.

This genus is erected for a single Californian species, which is intermediate in its characters between *Trichodesma* and *Anobium*, the sculpture of the under surface and the vestiture pointing toward the former, while the excavate metasternum suggests *Anobium*, in which, however, the excavation is deeper, the tarsi narrower and the palpi of different form.

1. **A. sericans** n. sp.—Subcylindrical, more than twice as long as wide, piceous brown, clothed with rather dense recumbent brown and cinereous hairs, with numerous longer erect hairs. Head finely granulate. Prothorax about as long as wide, sides nearly parallel in anterior half, then rounded and convergent to base, with which they form a continuous curve, the hind angles not defined; front angles right, disk strongly gibbous and compressed, the median line carinate from the front margin to the summit of the gibbosity; surface densely granulate, vestiture dark brown, with four paler discal spots. Elytra evidently wider than the prothorax, the recumbent pubescence holosericeous, the cinereous hairs so disposed and directed as to give the appearance of a dark submedian fascia and subapical spot with some smaller dark areas irregularly disposed. Legs finely cinereous pubescent, with longer hairs. Sterna with numerous rather large rounded granules; ventral surface rather sparsely simply punctate, the margins of the segments granulate. Length 5.4 mm.

Described from a single individual of unknown sex, beaten from dead branches of live oak at Pomona, California, May. This is the species referred to in my California list as *Xestobium* n. sp. following a determination by Dr. Horn.

ANOBIUM Fabricius.

The old genus *Anobium*, established by Fabricius in his Systema Entomologiæ (1775), was, like most of the early genera, made to cover a far greater diversity of forms than the more scientifically

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critical judgment of later systematists could accept. In his later Systema Eleutheratorum (1801) Fabricius includes under this caption fifteen species, now distributed among some eight or ten genera or subgenera in European lists. Notwithstanding a looseness of definition, which permits the association of species of *Ernobius*, *Xestobium*, *Priobium*, *Endecatomus*, *Cis*, etc., under a single name, the genus was described with greater precision than most earlier and many of later date, and in a gradually restricted sense has been in constant use in Europe and America for over a hundred years. In the latest European list the authors have replaced *Anobium* Fab. by *Byrrhus* Geof. It is not my purpose to discuss here at length the propriety of this course, but I cannot refrain from saying that aside from the questionable availability of the Geoffroyan genera because of lack of conformity to the generally recognized rules of binomial nomenclature, the substitution of a name never current in this connection, but long used in another, for one which has been in constant use for a century appears to me to be totally unwarranted and calculated only to subvert the interests of science by creating a needless confusion in existing literature. The law of priority is not a fetich to be blindly followed but should always be subordinated to what the late Dr. Hamilton bluntly calls the law of common sense.

The first author to divide the old genus *Anobium* on structural characters was C. G. Thomson in his work on the Skandinavian Coleoptera, 1859–63, in which he restricts the name to those species having the prothorax excavated beneath for the reception of the head, and the pectoral excavation for the reception of the antennæ prolonged into the metasternum.* The genera *Ernobius*, *Hadrobregmus*, *Sitodrepa* and *Cnecus* were based upon other members of the old *Anobium*, and all of these, with the exception of *Cnecus*, which is a synonym of *Xestobium* Motschulsky, still stand. Both

* In his paper on the Anobiidæ LeConte writes as follows in this connection: "The modern idea of types for genera cannot be rigorously applied to those founded by the older authors, and the attempt to do so has been productive of much confusion. The author who first distinguishes the composite elements of a genus to which no type is definitely assigned by the founder, may certainly use his judgment in applying the original name to any one of the new genera which contains species of the original author. This judgment once exercised constitutes a kind of priority which must be respected, in order to prevent the inconvenience of applying the old name to several different genera according to the ideas

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LeConte in 1862 and Mulsant and Rey in 1864 treated this group with scientific acumen, but both being ignorant of Thomson's work, many of the generic names proposed by them are synonymous with those of the Scandinavian author. Later European writers have exhibited a marked conservatism in their estimates of the importance of the genera and subgenera proposed, and in the recent catalogue of Heyden, Reitter and Weise, *Dendrobium* (*Cœlostethus* Lec), *Microbregma*, *Hadrobregmus*, *Nicobium* and *Sitodrepa* are all regarded as subgenera of *Anobium*. The genus as thus constituted seems to me undesirably complex. The association in the same genus, of *Dendrobium* with its widely separated coxæ, broad truncate prosternum, deeply excavate metasternum and connate ventral segments, and *Sitodrepa* with its narrowly separated coxæ, acuminate prosternum, unexcavated metasternum and free ventral segments, is quite incongruous. Both *Dendrobium* and *Sitodrepa* possess full generic value and the same should I think be said of *Nicobium*. *Hadrobregmus* and *Microbregma* are indeed much more closely related to the true *Anobium* and might reasonably be considered of subgeneric import, though in the present essay I have chosen to separate them as distinct genera. As here limited the genus *Anobium* differs from *Hadrobregmus* only in its very deep abruptly formed metasternal cavity and contains but a single species occurring in both Europe and America. This is the common European *Anobium striatum* Oliv., frequent in the walls of houses where its habit in common with certain other species, of tapping with its mandibles, the surface on which it stands has earned for it among the superstitious the name of the death tick or death watch. The resemblance of this species to certain *Hadrobregmi* is very striking; so much so indeed that LeConte, failing to observe the deep metasternal cavity, described native specimens under the name *Hadrobregmus pumilus*.

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of subsequent commentators. This is the principal laid down in the "Merton Rules," the "A. O. U. Code," indorsed after mature deliberation by the Entomological Society of London and has been accepted by the great majority of modern naturalists. It appears to me to be eminently logical and just. The method advocated of late in certain quarters of determining a genus by the first species described therein is simple, definite and convenient, and while in no sense scientific might with advantage be used in the future; it should never be made retroactive, however, for obvious reasons.

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1. **A. striatum** Oliv.—Elongate, subcylindrical, brown, opaque, with rather sparse short perfectly recumbent pubescence. Antennæ 11-jointed, about half the length of the body in the male, shorter in the female; third joint slightly shorter than the two following united; fourth to eighth small, subequal; ninth equal to the six preceding; ninth to eleventh longer than the entire remainder. Head and prothorax simply finely punctate, the former with a prominent frontal protuberance, the latter strongly elevated posteriorly and compressed, the front declivity of the elevation lightly channeled, the sides obliquely impressed; side margins strong, nearly straight and a little convergent in front, just visibly sinuate behind the front angles which are sharply defined, right or slightly acute; hind angles rounded. Elytra slightly wider than the prothorax, with feebly impressed striæ of approximate subquadrate punctures; the interspaces wider than the striæ, not distinctly punctured. Beneath dull, finely pubescent and minutely punctate. Metasternum with a triangular glabrous fovea between the anterior cavity and the hind margin. Ventral segments one, three and five nearly equal, the fourth just visibly shorter; the second longest; first suture bisinuate, posteriorly arcuate at middle. Hind coxal plates narrow, nearly parallel, the hind margin almost straight. Fifth segment with a subapical transverse fovea in the male, the segment nearly flat in the female. Length 2.7-4 mm.

Very few native specimens of this species have been seen, the material before me containing only single examples from Massachusetts (Blanchard), Da Costa, New Jersey (Boerner) and Rosslyn, Virginia (Chittenden).

HADROBREGMUS Thomson.

Elongate, subcylindrical; pubescence fine, short and usually sparse, perfectly recumbent. Antennæ 10- or 11-jointed, stem not serrate, three outer joints elongate, together longer than all the preceding. Prothorax slightly or distinctly narrower than the elytra, moderately or strongly gibbous, sides narrowly margined (except *defectus*), hind angles indistinct. Elytra feebly striate, with regular series of rather large punctures. Anterior and middle coxæ widely separated, the antennæ received between them; prosternal process truncate behind; metasternum not or scarcely excavated in front; ventral segments free, varying in relative length in the different species.

Certain species, notably those at the beginning of the series (*carinatus*, etc.), resemble *Oligomerus* quite closely, but they are really more nearly, indeed very nearly related to *Anobium*. The palpi also show an approach in form to those of *Anobium* and *Cœlostethus*, the terminal joint being more dilated apically with the tip obliquely truncate or subtruncate.

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Antennæ 10-jointed.

First ventral suture straight, the second segment not quite as long as the fifth.

Prothorax quite conspicuously narrower than the elytra, the sides without acute margin, except at hind angles.....1. **defectus.**

Prothorax very little narrower than the elytra, the sides acutely margined throughout.

Disk of prothorax slightly gibbous and compressed behind, sides convergent and usually feebly sinuate behind the front angles.

2. **carinatus.**

Disk of prothorax strongly gibbous, sides straight and nearly parallel for more than two-thirds their length.....3. **linearis.**

First ventral suture bisinuate, broadly posteriorly arcuate at middle, second segment a little longer than the fifth.....4. **pusillus.**

Antennæ 11-jointed.

Prothorax equal in width to the elytra, its side margin feeble anteriorly; second ventral segment barely as long as the fifth, first suture straight; brown; length 3 8 mm.....5. **laticollis.**

Prothorax slightly narrower than the elytra, side margin wide; second ventral segment equal to the fifth; black; length about 5 mm.

6. **umbrosus.**

Prothorax much narrower than the elytra; second ventral segment obviously longer than the fifth, first suture bisinuate; disk of prothorax strongly elevated and compressed, side margin bisinuate....7. **gibbicollis.**

1. **H. defectus** n. sp.—Dark brown, opaque. Antennæ 10-jointed. Prothorax much narrower than the elytra, disk rather strongly gibbous and moderately compressed posteriorly, sides not margined, slightly convergent anteriorly, and with very faint apical sinuation. Elytra striate as usual, the interspaces more evidently rugose than in *carinatus*. Ventral sutures straight. Length 4.5 mm.

The unique type is apparently a female and was taken at Tyngsboro, Mass., by Mr. Blanchard, who informs me that he found it on an oak stump in the woods. The obliteration of the side margin of the prothorax, if it be not accidental, is an extraordinary character, and one by which this species may be recognized at a glance. The prothorax is relatively narrower than in any other of our species except *gibbicollis*.

2. **H. carinatus** Say.—Red brown to piceous brown. Prothorax subequal in width to the elytra; sides rounded, straighter and moderately convergent in front, with or without a short sinus at the anterior angles, hind angles undefined; disk slightly gibbous and a little compressed posteriorly. Elytra with moderately impressed, strongly and closely punctate striæ. Antennæ scarcely half the length of the body, first joint arcuate and not much thickened; second about three-fourths as wide as the first and a little longer than wide; third similar to the second but smaller; fourth to seventh short and transverse, the fifth and seventh a little smaller than the fourth and sixth; eighth in the male subparallel and nearly two and one-half times as long as wide, twice as wide as the preced-

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ing joints, and as long as 2-7 united; ninth similar to eighth; tenth obviously longer than the ninth, linear, pointed. In the female the eighth joint is less parallel and equal to 3-7 united. The eyes are only slightly larger in the male. Length 3.4-6.8 mm.

This species is common and widely diffused in the northern and eastern portion of the United States and Canada. The material before me covers the region extending from New Hampshire to North Carolina (Black Mountains, Van Dyke) and west to Iowa and Missouri. Say's type was said to have been "found on the Mississippi above the mouth of the Ohio."

There is much variation in size, depth of color, and distinctness of the apical sinuation at the sides of the prothorax, but apparently little in other respects. The larger specimens—usually females—are most frequently darker in color, and it is in these that the post-apical sinuation often disappears, and the angles become in consequence less sharply outlined. The sinuation is nearly always evident in the smaller specimens, but there is every possible intermediate form in the series at hand, and in more than one specimen the sinuation is present on one side and not on the other. I am therefore compelled to unite *errans* Melsh. with *carinatus*, there being no other character given in the books for their separation.

3. **H. linearis** Lec.—Blackish brown, size of average *carinatus* and otherwise very similar, except that the sides of the prothorax are straight and parallel for more than two-thirds their length, and the disk is more strongly gibbous.

With the type which, according to LeConte, comes from the Saskatchewan region, Hudson Bay Territory, there have been placed two examples collected by Hubbard and Schwarz at Detroit. In both of these the sides of the prothorax are a little convergent in front, and one of them has one antenna 10 jointed, the other 9-jointed. The thoracic gibbosity is better marked than in either *carinatus* or *umbrosus*, but aside from this and the number of antennal joints the Detroit specimens could hardly be separated from *umbrosus*. These variations are puzzling and I am rather strongly inclined to believe that when sufficient material shall have been studied, both *linearis* and *umbrosus* will prove to be nothing more than extreme forms of the variable *carinatus*.

4. **H. pusillus** n. sp.—Very small, reddish brown, prothorax scarcely as wide as the elytra, disk strongly gibbous and compressed behind, elytral striæ more feebly impressed, at least on the disk, and somewhat more finely punctate

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than in *carinatus*. First and fifth ventral segments subequal, the second evidently longer than the fifth. Otherwise very nearly as in *carinatus*. Length 2.2-2.8 mm.

Ithaca, New York; Toronto, Canada; Pennsylvania; Cincinnati, Ohio; Dane County, Wisconsin; Tennessee; North Carolina. The first ventral suture is obviously though feebly posteriorly arcuate at middle, thus slightly narrowing the second segment, agreeing in this respect with *Anobium striatum*, to which species it otherwise bears a very striking resemblance.

5. **H. laticollis** n. sp.—Brown, a little stouter than *carinatus*, the prothorax fully equal in width to the elytra at base. Eyes (♂) moderately large, separated on the front by rather less than twice their vertical diameter. Antennæ 11-jointed, first joint of club parallel, three times as long as wide, and equal in length to the seven preceding. Prothorax a little more strongly gibbous than in *carinatus*, sides moderately convergent in front; margin fine and somewhat ill defined in front, becoming more pronounced and a little explanate at the hind angles, which are rounded as usual; surface finely not closely granulate-punctate, a subobsolete impressed line from the front margin to the summit of the gibbosity. Elytra finely punctate-striate, the interspaces much wider than the rows of punctures; apex narrowly but evidently truncate. Second ventral segment just visibly shorter than the fifth; first suture straight. Length 3.8 mm.

California (Castle Crag). A single male collected by Dr. Fenyes.

6. **H. umbrosus** n. sp.—This name is given with some hesitation to a rather large blackish form, with 11-jointed antennæ, which resembles in nearly every particular the large dark forms of *carinatus*. The sides of the prothorax are straight and moderately convergent anteriorly, without post apical sinuation. The second ventral segment is equal in length to the fifth, the first suture just visibly arcuate at middle. Length 5.1-5.5 mm.

White Fish Point, Lake Superior; New York; North Conway, New Hampshire (Blanchard).

Three examples from the first named locality in the Hubbard and Schwarz collection are taken as types. In one of the New York specimens the sixth and seventh joints of the antennæ are completely connate, but with the line of junction plainly indicated. It is possible that in a large series the number of joints will be found to vary as in *Oligomerus obtusus*, and that *umbrosus* is only an extreme form of *carinatus*.

7. **H. gibbicollis** Lec.—Varies in color from brown to piceous; pubescence longer than usual and more or less evidently condensed on alternate intervals of the elytra, these intervals being also a little more convex. Prothorax much narrower than the elytra, as long as or a little longer than wide, base and apex of equal width, the sides nearly parallel and bisinuate; front angles well defined,

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hind angles rounded; disk very strongly elevated and compressed posteriorly, the anterior declivity lightly furrowed; a strong lateral oblique impression before the middle, the posterior limiting elevation terminating in a marginal prominence. The antennæ are of the usual form, the ninth joint as long as the six (♂) or five (♀) preceding. The fifth ventral segment is subequal to the first and evidently shorter than the second; the first suture broadly sinuous. In the male the fifth ventral is slightly foveate at middle at the apex, a small prominence each side. Length 3.5–6 mm.

Pacific Coast from Vancouver to Southern California.

MICROBREGMA Seidlitz.

The above name was proposed by Seidlitz in his Fauna Transylvanica, 1891, for the European *Anobium emarginatum* Duft., a species with which our *foveatus* Kirby is apparently identical. Whether *Microbregma* should be regarded as a subgenus as originally proposed or as a genus, as I have chosen to do, is of course a matter of individual opinion and one to which reference has already been made under *Anobium*. The characters which separate it from *Hadrobregmus* are briefly as follows: Sides of prothorax straight and parallel, hind angles sharply defined; third ventral segment nearly twice as long as either the first or fourth; first and second ventral sutures anteriorly arcuate; fifth ventral densely granulate posteriorly; front and middle tibiæ acutely produced externally at apex.

1. **M. emarginatum** Duft.—Brown, prothorax not as wide as the elytra, the sides parallel and a little sinuate between the angles which are almost right; the base sinuate within the angles then broadly strongly rounded or lobed; disk with a very feeble median prominence before the hind margin, anterior to which it is broadly excavated, and on each side tuberculate; surface sparsely granulate. The antennæ are 11-jointed, the ninth joint shorter and more triangular than in *Hadrobregmus*, being only as long as the three or four preceding joints. The only other characters of importance are mentioned in the preceding generic diagnosis. Length 4–5 mm.

New Hampshire; Massachusetts; Canada; Michigan; Minnesota; Colorado; British Columbia.

This species is not given in either the New Jersey, District of Columbia, Southwestern Pennsylvania or Cincinnati lists, and is evidently confined in America to the northern portion of the continent. It occurs in northern Europe.

Var. *granicollis* n. var.—This name is proposed for a form occurring in Washington, Oregon (Portland), and California (Lake

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Tahoe), which differs from typical *emarginatum* in its much more coarsely closely granulate prothorax. Specimens average slightly larger than the typical form, ranging from 4.5–5.5 mm. in length.

CŒLOSTETHUS LeConte.

This name was proposed by LeConte in 1862 for the *Anobium notatum* of Say and his own *A. quadrulum*, the most notable character of which, though not mentioned by LeConte, is the connate ventral segments. Two years later Mulsant and Rey apparently without knowledge of LeConte's work, established the subgenus *Dendrobium* for the European species possessing this character. In his paper of 1865 LeConte suppressed *Cœlostethus* as a synonym of *Anobium*, and it is possibly on this account that *Dendrobium* still stands as a subgenus in the European catalogues.

The remarkable character mentioned above is accompanied by several other peculiarities of structure or facies, which are very constant and render the group an unusually sharply defined one and well worthy of generic standing. The eyes are moderately convex but rather small and distant; mandibles acutely carinate on the upper face; joints of antennal club of parallel form, together subequal in length to all the preceding; prosternum longitudinally carinate; metasternum abruptly deeply excavated to the middle, thence deeply narrowly sulcate to the hind margin; first ventral segment short; second, third and fourth subequal, fifth longest and more or less impressed at the middle of the apical margin. The first ventral suture is distinct and anteriorly arcuate at middle; the others are obliterated at middle. The punctures of the abdomen are annular or lunate, the inclosed areas showing a tendency, especially toward the sides, to become more or less prominent tubercles. This singular structure is present elsewhere only in the closely related *Trypopitys*. The disk of the prothorax is not elevated, the hind angles distinct, the surface strongly granulato-tuberculate. The vestiture is inconspicuous as a rule and more or less perfectly recumbent. Tarsi rather short.

Five species are known from our fauna, all occurring in the northern parts of our territory, or in the mountains when found farther south. They separate as follows:

Pubescence of elytra variegated, dark brown and cinereous.....1. **notatus.**
Pubescence of elytra uniform in coloration .....2.

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2. Hind angles of prothorax clothed above and beneath with dense yellow hair. 2. **americanus.**

Hind angles of thorax without patch of yellow hair.....3.

3. First joint of antennal club equal to three preceding; disk of thorax distinctly longitudinally impressed, apex of elytra scarcely truncate.

Vestiture of elytra very short, inconspicuous and almost perfectly recumbent, the alternate interspaces not elevated.....3. **quadrulus.**

Vestiture of elytra more conspicuous and with numerous more prominent short recurved hairs; alternate interspaces slightly more convex and more pubescent.....4. **alternatus.**

First joint of antennal club equal to the two preceding; disk of prothorax not distinctly longitudinally impressed; apex of elytra truncato-emarginate.....5. **truncatus.**

1. **C. notatus** Say.—Moderately elongate, subcylindrical, dark brown. Vestiture short, recumbent, dark brown, variegated with yellowish cinereous as follows: the base, median channel and two small discal spots on the prothorax; and on the elytra, basal, submedian and posterior transverse fasciæ, which are quite irregular, being usually more or less broken up into elongate spots. Head sparsely granulate; ninth antennal joint equal to or a little longer than the three preceding. Prothorax as wide as the elytra, sides parallel in basal two-thirds, distinctly sinuate before the hind angles, which are right or slightly acute; disk channeled from the front margin to the posterior depression; surface deeply concave within the angles. Elytra with closely punctate striæ, the intervals not wider than the striæ. Mesosternum and abdomen moderately closely, coarsely annulate or lunate-punctate. Length 3.2–4 mm.

New England States and Canada to Michigan, Missouri and North Carolina. This is our prettiest species and the only one occurring in the Eastern States. It is said in the Washington List to occur on old oak branches.

2. **C. americanus** n. sp.—Oblong, robust, piceous-brown, not shining, pubescence fine, short, and perfectly appressed. Head moderately closely granulate, ninth antennal joint but little wider than the preceding and a little shorter than the next three. Prothorax as wide as the elytra at base, sides nearly parallel, not sinuate before the hind angles which are a little obtuse. Disk distinctly impressed at middle, transversely impressed along the base each side, the impression becoming deeper toward the angles, the latter with a dense patch of appressed yellow hair which is continued beneath along the hind margin of the flanks and also on the contiguous surface of the humeri and on the mesosternal side pieces. Elytral striæ distinctly impressed, the interspaces, except near the suture not or scarcely wider than the striæ and distinctly convex. Metasternum strongly granulato-tuberculate; ventral segments with the usual annular punctuation which tends strongly to become tuberculate toward the sides; last ventral concave before the apex, the apical margin deflexed. Length 4.5–5.5 mm.

Colorado (Ouray and Silver Plume, Wickham); National Park, Wyoming (Schwarz).

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This species is very closely related to the European *pertinax* Linn. In specimens of the latter sent by Reitter, the ninth joint of the antennæ is slightly longer than the three preceding, and the elytral interspaces are wider and nearly flat.

3. **C. quadrulus** Lec.—Moderately robust, dark brown, with fine sparse appressed pubescence, which becomes a little longer and paler in the posterior thoracic impressions. Ninth joint of antennæ equal in length to the three preceding. Head and prothorax of the form and sculpture common to the genus. Prothorax as wide as the elytra, sides not sinuate before the hind angles which are a little obtuse; disk feebly concave at middle. Elytra with regular striæ of quadrate punctures, the intervals scarcely wider than the striæ and usually very slightly convex. Beneath sculptured as usual in the genus; the last ventral broadly concave at middle, nearly or quite throughout its length, the concavity becoming deeper posteriorly. Length 4.3–5.6 mm.

This species ranges from the middle Sierras of California to British Columbia. I have seen specimens from Kaweah, California (Hopping); Lake Tahoe (both in California and Nevada); Oregon; Tenino, Washington, and Vancouver and North Bend, British Columbia.

4. **C. alternatus** n. sp.

Nearly identical in form, size and sculpture with *quadrulus*, the only noteworthy differences being those given in the table. The suberect recurved hairs which are intermixed with the appressed pubescence are very short but are distinctly visible in profile with a good lens.

Three examples only have been seen; one from Colorado in the Horn collection, the other two taken by Cockerell in New Mexico (Wootens and "eight miles above Mora"), and now in my collection.

5. **C. truncatus** n. sp.—More elongate and smaller than *quadrulus*; color varying from red-brown to dark brown; pubescence completely appressed. Prothorax scarcely as wide as the elytra at base; ninth joint of antennæ equal to the two preceding joints, fourth to eighth distinctly triangular (trapezoidal or subquadrate in the preceding species); thoracic disk scarcely or very feebly concave at middle; elytral interspaces nearly flat and wider than the striæ, the apex distinctly truncato-emarginate; other characters nearly as in *quadrulus*. Length 3-4.5 mm.

Specimens before me are from Lake Tahoe, Nevada, and California (Hubbard and Schwarz); Oregon (Koebele); Eastern Washington (Koebele); Tenino, Washington, and Vancouver, British Columbia (Hubbard and Schwarz).

An example in the Horn collection from Colorado seems scarcely different and is referred here.

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TRYPOPITYS Redtenbacher.

The very striking resemblance between the species of this genus and those of *Cœlostethus* persists throughout almost every detail of structure, form and sculpture. The only character given in the books for their separation is the difference in antennal formation. In *Trypopitys* these organs are more or less serrate, with the outer joints less suddenly and conspicuously longer. The degree of serration varies somewhat, being more complete in the European *carpini* than in our species. It seems not to have been observed that the tibial spurs are entirely wanting in *Trypopitys*, a character elsewhere noted only in *Xarifa*. European authors place this genus in the Xyletinini on the strength of the serrate antennæ. This arrangement is a convenient one, but it entirely overestimates the importance of the antennal differences, which, it should be observed are nowhere in the Ptinidæ of more than generic significance. In every other respect *Trypopitys* is intimately related to *Cœlostethus* and must be associated with it.

Two closely allied species are known in our fauna, one inhabiting the eastern United States, the other the Rocky Mountains and Pacific Coast. They are distinguished as follows:

Pubescence throughout shorter and subrecumbent .....1. **sericeus.**
Pubescence longer and more bristling .....2. **punctatus.**

1. **T. sericeus** Say.—Oblong, nearly two and one-half times as long as wide, subcylindrical, brown; pubescence ochreous, short and recumbent. Head deeply sunk within the prothorax, the eyes nearly or quite covered in repose; front evenly convex, densely granulate. Antennæ less than half as long as the body, the outer joints not wider; first joint elongate, moderately stout; second small, quadrate; 3-6 triangular, the third nearly as long as wide, the others distinctly transverse; seventh a little longer and becoming parallel apically; eighth and ninth progressively longer and more oblong; tenth similar to the ninth, eleventh narrow and more elongate. Prothorax not quite as wide as the elytra, about as long as wide, sides parallel, broadly sinuate at middle, hind angles slightly sinuately retracted, nearly right and sharply defined; disk evenly convex, longitudinally sulcate at middle, the sulcus evanescent anteriorly; posterior transverse impressions well marked, but less deeper than in *Cœlostethus;* surface granulate. Elytra with regular series of approximate quadrate punctures; the intervals a little convex and not much wider than the punctures. Beneath ochreo-pubescent, the hairs somewhat longer than above; prosternum not distinctly carinate; metasternum closely granulate; abdomen annulate-punctate. Length 4.9-6.2 mm.

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New Hampshire; Vermont; Massachusetts; New York; Pennsylvania; Virginia; Florida (Enterprise); Texas (Columbia); Michigan; Iowa; Indian Territory (Atoka).

2. **T. punctatus** Lec.—The description of *sericeus* applies almost perfectly to this species, which is only distinguished by its longer, more erect pubescence. The punctures of the elytral striæ are possibly a trifle smaller, but the difference is scarcely obvious. Length 4.5–6.5 mm.

Colorado (Glenwood Springs, Fenyes); New Mexico (Santa Fé, type, and Silver City); Arizona (Pinal and Chiracahua Mountains); California, numerous localities from Sylvania to San Diego.

It may be here remarked that *T. carpini*, the single European species upon which the genus was based, looks much like our species, but the antennæ are more uniformly serrate and the elytral punctures finer. The ventral punctuation, while of the same type, is sparser and less deeply impressed.

COLPOSTERNUS new genus.

Elongate, subcylindrical. Terminal joint of both labial and maxillary palpi very narrow and acuminate, not wider than the preceding joints. Antennæ 11-jointed, serrate, gradually narrower externally, the outer joints not elongated. Prothorax as wide as the elytra; the latter confusedly punctate. Front and middle coxæ distant; prosternum not carinate; metasternum moderately deeply but not abruptly excavated in front, the median line not sulcate behind. Posterior coxal plates not distinctly angulate. Ventral segments free; first, third and fourth subequal; second nearly as long as the third and fourth together; fifth a little shorter than the second; first suture broadly posteriorly arcuate at middle. Tarsi slender; the first joint of hind tarsus nearly four times as long as wide; second half the length of the first and fully three fourths longer than wide; third and fourth gradually shorter, the latter widest and deeply emarginate; fifth slender, twice as long as wide

The single Pacific Coast species, for which this genus is created, was referred by Horn to *Trypopitys* on the strength of the serrate antennæ and excavate metasternum. As Horn remarks, the insect looks far more like an *Oligomerus*, but his further statement that there are no characters other than the elytral sculpture and the more explanate sides of the prothorax to separate it from *Trypopitys* is quite unwarranted, the palpal, ventral and tarsal formations being

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entirely different. This genus does not fit very well in a linear arrangement, and is placed after *Trypopitys* rather from the convenience of tabulating it in this position, than from a conviction of the propriety of so doing.

1. **C. tenuilineatus** Horn.—Elongate, parallel, brown, sparsely pubescent. Head dull and minutely but not densely granulose; eyes moderate. Antennæ serrate; first joint arcuate, elongate; second globose; third triangular, about as wide as long; fourth to sixth transversely triangular, the outer angle acute; following joints gradually narrower and more elongate. Prothorax as wide as the elytra, sides rather widely margined, moderately convergent in front, hind angles obtuse and somewhat rounded, front angles right; disk elevated at middle posteriorly, the median line sulcate from the summit of the elevation to the front margin; an oblique impression each side extending from the middle to the base; surface sparsely granulate laterally, more densely along the median furrow. Elytra irregularly moderately closely punctate and with fine prostrate pubescence, which becomes condensed along the suture and in four fine equidistant lines on each elytron, the three inner ones uniting before the apex; there is also a short oblique scutellar line. Beneath finely pubescent, the metasternum minutely granulose, the ventral segments finely closely punctate. Length 3.3–5.4 mm.

Three specimens of this rare species are before me, bearing labels, Los Angeles County, California (Van Dyke); Los Gatos, California (Hubbard and Schwarz); and Santa Catalina Island, California, collected by myself. The type was described from Oregon.

Xyletinini.

The genera of this group are of elongate oval form as a rule, and have the contractile power fairly well developed. The prothorax is excavated beneath for the head, which is strongly deflexed in repose, the mandibles reaching the metasternum; the under surface of the head more or less impressed or deeply excavated, the antennæ curving into these cavities and resting against the contiguous front coxæ. The antennæ are variable in form, 11 jointed in our genera. The metasternum is not lobed in front; the trunk is not grooved for the reception of the middle and hind legs.

Our genera are six in number and separate as below:

Head merely broadly impressed beneath in front, not distinctly excavated for reception of the antennæ; metasternum not declivous anteriorly.
Three outer joints of antennæ elongate.
Antennal funicle strongly acutely serrate or even subpectinate, the outer joints not or but slightly narrower than the club, at least in the male; middle coxæ distinctly separated..... **Vrilletta.**

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Antennal funicle feebly or scarcely serrate, middle coxæ contiguous or nearly so.

Outer joints of funicle subequal in width to the club; terminal joints of palpi broad ..... **Euvrilletta.**

Outer joints of funicle about one-half as wide as the club; terminal joints of palpi narrow ..... **Xyletomerus.**

Three outer joints of antennæ not elongate or only slightly so (*distans*); antennæ strongly serrate ..... **Xyletinus.**

Head more or less deeply excavated beneath for the antennæ; metasternum declivous in front, either at sides or throughout its width.

Antennæ serrate, outer joints not elongate, metasternal declivity abruptly limited behind by a raised line ..... **Lasioderma.**

Antennæ not serrate, joints 9–11 elongate; metasternal declivity more gradual and not limited posteriorly by a raised line—except partially in *simplex* ..... **Megorama.**

Of the above genera only *Xyletinus* and *Lasioderma* occur in the palearctic fauna. *Metholcus*, represented by a single species in southern Europe, is close to *Xyletinus*, differing in its more truly cylindrical form, the prothorax not narrowed in front; the terminal joint of palpi emarginate at apex.

VRILLETTA LeConte.

The members of this genus are among the largest of our Anobiini. They are cylindrical, convex, robust, clothed with fine short appressed pubescence, and with finely striate elytra. The terminal joints of labial and maxillary palpi are similar, elongate, suboval, pointed, the inner side more strongly rounded. Antennæ not much longer than the median line of the prothorax; 11 jointed, the three outer joints larger, forming a club which is scarcely as long as all the preceding joints; first joint stout, rather more than twice as long as wide; second subglobose; third to eighth triangular, subequal in length but gradually more transverse, forming an acutely serrate or even subpectinate funiculus; joints 9 and 10 triangular or subtriangular, each about as long as the three preceding; eleventh elongate oval. Eyes small, separated by nearly four times their longest diameter, not appreciably larger in the male. Front strongly acutely margined at sides, obscurely carinate at middle; epistomal suture arcuate, scarcely impressed. Prothorax as in *Xyletinus*, but with the side margins more widely reflexed. Elytra finely striate as in *Xyletinus*, interspaces finely rugose and dull, the tip usually somewhat truncate. Prosternum excavated for the head, the latter scarcely impressed beneath. Front coxæ contiguous; middle coxæ

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narrowly but distinctly separated. Mesosternum horizontal except for the ascending intercoxal process; metasternum not declivous in front; median line smoother and finely impressed posteriorly; hind coxal plates subparallel, a little dilated at their inner extremity. Third and fourth ventral segments subequal and a little shorter than the first and second, the fifth longest. Legs moderately stout; the front and middle tibiæ concave on their outer margin; tarsi a little compressed, rather densely pubescent beneath, first joint subequal to the three following, terminal joint nearly as long as the two preceding and scarcely narrower.

Antennal stem subpectinate in the male, the first two joints of the club strongly acutely produced in both sexes.....1. **convexa.**

Antennal stem acutely serrate, the outer joints strongly transverse.

Eighth joint of antennæ as wide as the ninth in both sexes; first two joints of club elongate-triangular, the outer angle acute and a little produced; color blackish, elytra each with a small antemedian pale spot (sometimes lacking); prothorax rufous, more or less infuscate anteriorly. 2. **murrayi.**

Eighth joint of antennæ less strongly produced, subequal in width to the ninth in the male, but oviously narrower than the latter in the female.

Form less robust; brown or blackish brown, prothorax concolorous, elytra with or without a small antemedian pale spot; prothorax closely very minutely punctulate and with scattered larger subgranulate punctures. 3. **blaisdelli.**

Form more robust; uniformly dark brown (type) or variegated with pale vittæ, which are more or less confluent anteriorly and are subject to reduction; prothorax granulate-punctate, the interspaces densely finely punctulate; elytra distinctly truncate at apex..4. **expansa.**

Form more robust, brown, with short yellowish pubescence; prothorax not granulate, densely finely punctate and with scattered coarser punctures, which are larger and more shallow laterally; elytra not truncate at apex.....5. **laurentina.**

Form very robust; black, pubescence cinereous; prothorax densely rather coarsely punctate, the punctures becoming subgranulate toward the side margins; elytra very narrowly truncate at apex..6. **plumbea.**

1. **V. convexa** Lec.

This species differs from all others of our fauna in having the antennal funicle (fig. 12) subpectinate in the male. The processes of joints 4–8 are slender and subcylindrical, becoming gradually longer, the eighth joint three times as wide as long. The ninth and tenth joints are more elongate as usual, but instead of the usual triangular form they are produced inwardly somewhat after the manner of the funicular joints though to a less extreme degree. The

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eighth joint is as wide as the ninth, the latter a little wider than the tenth, the eleventh longer and very narrow. The pronotum is granulate at sides, the punctures becoming small and deep at the middle, especially posteriorly; the interspaces scarcely perceptibly punctulate. The pubescence is rather better developed than elsewhere; the sides of the prothorax less widely margined and the elytral interspaces less flat. The elytral apices are narrowly but plainly truncate. In the only two males at hand the elytra are testaceous, with the suture and side margins dark. It is possible that this is the normal coloration in this sex. The females are uniformly dark brown, and differ otherwise from the male in their less strongly produced antennal joints which are, however, obviously wider than in the males of any other species. Length 6–7.75 mm.

California, occurs near San Francisco (Alameda County), but apparently not common. One example from Ensenada, Lower California, in my own collection appears to be identical.

2. **V. murrayi** Lec.—Black or nearly so, prothorax rufous, more or less infuscate apically, elytra with or without a small antemedian rufous spot occupying the fifth to seventh interspaces. Antennal stem (fig. 13) acutely serrate, the outer joints very strongly transverse, the eighth as wide as the ninth in both sexes; ninth and tenth joints triangular, nearly twice as long as wide in the male, slightly less elongate in the female, the outer angle acute; eleventh joint longer and narrower, oval, pointed. The prothorax is finely not closely punctate, the punctures subgranulate, especially toward the sides; interspaces closely minutely punctulate. Elytra finely striate, the striæ not evidently punctate, interspaces finely rugose, not granulate, apex narrowly truncate. Lower surface densely finely punctate, with scattered slightly coarser punctures as usual. Length 5–7 mm.

California, Marin and Napa Counties (Fuchs); Lake County (Van Dyke); Makelumne Hill (Blaisdell); Mt. Wilson, Los Angeles County (Fenyes).

The elytral spot is constantly present in all specimens from the more northern localities, and is as constantly lacking in those from Los Angeles County. The form in this species is a little more slender than in *convexa* and *expansa*.

3. **V. blaisdelli** n. sp.—Our smallest and narrowest species, though some males of *murrayi* are almost as slender. Dark brown throughout, the elytra with a small antemedian pale spot, which is rarely lacking. Eighth joint of antennæ as wide as the ninth in the male, but plainly narrower than the latter in the female. The antennal funicle is acutely serrate, but with the joints less strongly produced than in *murrayi*; the outer angle in the first two joints of the club is

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also less acute than in the latter species. In the male the ninth and tenth joints are very nearly twice as long as wide; in the female only about one-half longer than wide. Pubescence and sculpture nearly as in *murrayi*. Length 3.5–6.25 mm.

California, San Diego (Blaisdell); Los Angeles County (Fuchs); Pasadena.

This species can only be confused with *murrayi;* but if mature, the color, which appears to be very constant, should at once separate them. The antennal differences are distinct enough if both sexes are present. The species is dedicated with much pleasure to my friend, Dr. F. E. Blaisdell, of San Francisco, who has contributed the greater number of the specimens before me.

4. **V. expansa** Lec.—Moderately robust, dark brown or piceous, the elytra usually variegated with pale vittæ, which vary in number and development and are more or less confluent anteriorly. Pubescence, especially of the elytra, very short and inconspicuous. Prothorax widely margined, granulate-punctate over the whole surface, the interspaces between the punctures or granules densely, finely punctate. Elytra finely rugose as usual and with fine scattered granules, which are more distinct in the basal region; striæ very finely but obviously punctulate; apex more widely truncate than in our other species. Joints of antennal funicle moderately strongly transverse, but less produced inwardly than in any of the preceding species, the eighth joint as wide as the ninth in the male, narrower than the latter in the female. The first joint of the club is less triangular (more parallel) than in any other species, and with the following joint is as usual a little shorter in the female. Length 5.25–6.5 mm.

California (Mendocino, San Francisco and vicinity, Kaweah, Pasadena); Washington, Tenino (Schwarz).

All the above localities are represented by the variegated form which seems to be most common near San Francisco. The type of the species is entirely destitute of pale markings and is without definite locality. In the material at hand are two specimens ("Lake Tahoe and Tuolumne County"), which are also unicolorous brown. These may be and probably are identical with the type, but it is by no means certain that they are the same as the variegated form which has been thus referred in collections. The two examples above mentioned differ from each other in some degree and the question cannot be settled until additional material of both sexes shall have been received.

5. **V. laurentina** n. sp.—Robust, brown, clothed with fine pale flavate pubescence. Head and prothorax not at all granulose, the punctures of the latter becoming larger and shallow at sides instead of deep and perforate, the interspaces finely densely punctate. Elytral striæ noticeably punctulate, the interspaces somewhat convex; apex not truncate or almost imperceptibly so. Joints of an-

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tennal stem moderately acute and about as in *expansa;* the eighth joint (fig. 15) being narrower than the ninth in the female (male not known). The ninth joint is just perceptibly longer than wide, broader at base than usual, thus resembling *expansa;* tenth joint triangular, a little longer than wide. Length 5.8–6.3 mm.

Two examples collected at Toronto, Canada (Crew), have been sent me by Mr. Wickham. The species differs from all others known to me by the simple punctuation of the head and thorax, and the almost completely nontruncate elytral apices. There is a narrow smooth median line on the pronotum which is also probably characteristic. The discovery so far to the east of a species of *Vrilletta*, a genus hitherto supposed to be peculiar to the Pacific Coast, is interesting and surprising. Thinking there might possibly be some error in locality I sent Mr. Crew a note of inquiry. He replied that he had taken these and several other examples, recently sold to Cornell University, from oak twigs, but that they seemed rare or very local, as he had widely searched his locality for others without success.

6. **V. plumbea** n. sp.—Very robust, black, sparsely clothed with fine, short cinereous hairs, which give a leaden lustre to the surface. Head and prothorax coarsely rather densely punctate, the latter with a few small scattered granules at sides. Elytral striæ finely punctate; apex very narrowly truncate. Antennæ (fig. 14) very similar to those of *expansa* and *laurentina*, but with the ninth joint more truly triangular and slightly longer than wide. Length 7.5 mm.

Two specimens only of this species have been seen (both probably females), one in the Horn collection from Mt. Shasta, California, the other collected by Mr. Wickham at North Yakima, Washington. The large size, robust form, color, and densely coarsely punctate thorax make the species easily recognizable.

EUVRILLETTA new genus.

This genus is structurally very closely allied to *Vrilletta* and might, perhaps, be regarded as a subgenus; the somewhat numerous species of the latter genus are, however, so perfectly homogeneous that I dislike to introduce a disturbing element. Briefly, the present genus differs from *Vrilletta* as follows: The antennal funicle is rather feebly serrate, the outer joints nearly as long as wide, the joints of the club more elongate and nearly parallel; the terminal joint of maxillary palpus triangular, a little longer than wide, the outer edge oblique, the inner angle rather narrowly rounded; terminal joint of labial palpus nearly as wide as long, broadly triangular, the

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outer edge squarely sinuate-truncate, the inner side strongly rounded; middle coxæ subcontiguous. The prothorax is also more narrowly margined and the elytra more lightly striate; the tarsi relatively a little longer, the basal joint of the middle and hind tarsi a little longer than the three following, barely as long as the three following in *Vrilletta*. A single California species is known; it has quite the appearance of a large *Xyletinus harrisii*.

1. **E. xyletinoides** n. sp.—Cylindrical, convex, two and one-half times as long as wide; brown, surface feebly shining, clothed with fine short and rather sparse appressed fulvo-cinereous pubescence. Eyes not large, moderately convex, front wide, not at all carinate at middle, punctuation rather sparse and fine. Antennæ (fig. 16) nearly one-third the length of the body, first joint moderately short, elongate-oval, and a little arcuate; second short, obconic; third to eighth gradually shorter and wider, the third about twice as long as wide, the eighth slightly wider than long; ninth subequal to the four preceding and but little wider than the eighth, sides subparallel and a little sinuate; tenth similar to the ninth but slightly narrower; eleventh still narrower and a trifle longer, apex pointed. Prothorax transverse, rather strongly and evenly convex, sides moderately convergent anteriorly, margin narrowly explanate in front, becoming wider at the hind angles, which are rounded and undefined, front angles right; surface finely punctulate and with more distant larger punctures, which are, however, not coarse and show a tendency to become rugose. Elytra equal in width to the thorax, surface finely rather densely punctulate, lightly striate, the striæ finely punctate. Under surface finely and closely punctate and finely pubescent. Length 5.4–6 mm.

California.

Three examples have been seen, one taken by Mr. Hopping at Kaweah, the other two by Dr. Fenyes in the Sierra Madre Mountains near Pasadena. There are no obvious antennal differences in the three specimens and it is probable that they are all males.

XYLETOMERUS new genus.

This genus is erected for a small California species which has the form, size and general appearance (except in color) of *Sitodrepa panicea*. Structurally it is most closely related to *Euvrilletta*, from which it differs in antennal and palpal formation as follows: The terminal joints of both maxillary and labial palpi are narrower, fully twice as long as wide, feebly dilated apically, with the outer edge strongly oblique. The antennal club is obviously longer than all the preceding joints, the joints of different form; the funicular joints not more than half as wide as the club, scarcely serrate.

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Middle coxæ contiguous. The hind coxal plates are as in *Euvrilletta*. In most other points of structure *Xyletomerus* is substantially in agreement with *Vrilletta* and *Euvrilletta*.

1. **X. histricus** n. sp.—Elongate, two and one-half times as long as wide, parallel, moderately strongly convex, piceous brown, with fine fusco-cinereous recumbent pubescence, antennæ and legs rufous. Head finely not very closely punctate, occiput feebly carinate; eyes small, only moderately convex. First joint of antennæ (fig. 17) stouter as usual, second similar but smaller, third narrower and somewhat elongate; fourth to eighth similar, small, a little prominent interiorly; ninth triangular, about twice as long as wide, the outer angle a little obtuse; tenth similar to the ninth; eleventh about one-half longer than the ninth, oval. The club is evidently longer than the stem, the ninth joint equal to the five preceding or nearly so. Prothorax just visibly wider than the elytra at base, transverse, convex, moderately narrowed in front; side margin very narrow and only just perceptibly wider at the hind angles, which are broadly rounded; front angles nearly right and a little rounded at vertex; base feebly impressed each side of the middle; surface densely finely and punctate with scattered slightly larger punctures. Elytra with scarcely impressed finely somewhat distantly punctate striæ, interspaces nearly flat, finely closely punctulate. Lower surface finely closely punctate and finely pubescent. Length 2.9-3.2 mm.

California, Sacramento County (Koebele); Los Gatos (Hubbard and Schwarz).

Three examples only have been seen, one from the former and two from the latter locality. In one of them the joints of the antennal club are slightly more elongate; this is probably a male.

XYLETINUS Latreille.

Form more or less elongate, varying from oval to oblong; mentum trapezoidal, more or less arcuate in front; terminal joints of palpi compressed, elongate, feebly dilated apically, outer edge oblique, inner angle rounded: more broadly triangular in *harrisii*, entirely anomalous in *gracilipes*. Antennæ serrate or subpectinate, the outer joints scarcely or only slightly more elongate. Eyes variable in size, not emarginate. Front acutely margined laterally, epistomal suture arcuate, scarcely impressed. Prothorax transverse, hind angles broadly rounded and undefined, front angles nearly right and narrowly or scarcely rounded. Elytra striate. Prosternum deeply excavated for the head, the latter merely slightly impressed beneath; front coxæ contiguous; mesosternum horizontal and channeled at middle in front, becoming strongly ascending between the middle coxæ, which are separated by fully half their own width. Metasternum finely sulcate at middle, at least posteriorly; gradually

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feebly declivous in front, the declivity not limited posteriorly by a raised line; side pieces wide. Ventral segments not very unequal, the first, second and fifth longer than the third and fourth; sutures straight. Legs moderate, tarsi rather stout and about two thirds as long as the tibiæ as a rule; very slender and subequal to the tibiæ in *gracilipes;* first joint equal to the two or three following.

Our species are divisible into two well defined sections, one of more oval form, with small eyes and generally more strongly serrate antennæ; the other more cylindrical, with large eyes and less strongly serrate antennæ. Nine species are known to me, separable as follows. The *puberulus* of Boheman is not included; I am unable to recognize it from the description and it is quite likely not a member of our fauna, notwithstanding the alleged locality, San Francisco.

Eyes larger and more convex, evidently larger in the male; width of the front from one and one-half to three and one-half times that of the eye as seen from the front; form of body more cylindrical.

Posterior raised margin of metasternal intercoxal process distinctly angulate.

Front (♂) fully three times as wide as the eye, pubescence fine and sparse, size large (5-7.5 mm.).....1. **distans.**

Front (♂) about one and one-half times as wide as the eye, size small (2.5–3 mm.).....2. **pallidus.**

Front (♂) twice as wide as the eye; pubescence dense, size moderate (3.5–6 mm.).....3. **mucoreus.**

Posterior raised margin of metasternal intercoxal process broadly arcuate.

Less robust, prothorax more parallel, the side margins very narrow and not at all reflexed; eyes of male relatively larger, the front scarcely more than twice as wide as the eye; third antennal joint (♂) about one-half longer than wide; last joint of maxillary palpus elongate, feebly triangular.....4. **peltatus.**

Stouter, prothorax less parallel, the side margins narrowly but evidently reflexed; eyes of male relatively smaller, the front about two and one-half times the width of the eye; third antennal joint (♂) scarcely longer than wide; last joint of maxillary palpus broadly triangular. 5. **harrisii.**

Eyes small, not very convex, scarcely perceptibly larger in the male, width of the front five or six times that of the eye as seen from the front; form of body more oval.

Tarsi normally stout, the fifth joint but little longer than wide; terminal joints of palpi compressed, triangular or elongate-securiform.

Antennæ acutely serrate, first two ventrals (♂) without line of erect hairs.

Head not at all strigose, sides of prothorax flattened, pubescence finer and sparser.....6. **fucatus.**

Head substrigose, sides of prothorax not flattened, pubescence rather dense and conspicuous.....7. **pubescens.**

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Antennæ subpectinate in the male; the first two ventral segments (♂) with a median line of short, dense, erect hairs .....8. **lugubris.**

Tarsi very slender, the fifth joint about five times as long as wide; terminal joints of palpi not compressed, very elongate, subacicular; male antennæ subpectinate.....9. **gracilipes.**

1. **X. distans** n. sp.—Form parallel, moderately robust; brown, pubescence fine, sericeous, fulvocinereous, moderately plentiful. Antennæ about one-third as long as the body, first joint stouter, oval, second smaller but similar; third to tenth triangular, third longer than wide, the outer angle obtuse; fourth to seventh about as wide as long, the outer angle acute; eighth a little longer than the seventh and rather longer than wide, ninth about one-third longer than the eighth; tenth similar to the ninth; eleventh elongate-oval or fusiform, apex pointed. Terminal joints of palpi about one-fourth longer than wide, outer edge oblique, inner angle rather broadly rounded. Eyes moderately large and convex, width of front slightly greater than twice their vertical diameter in the female; surface of head shining and finely not densely punctate. Prothorax shining, sparsely finely punctate and minutely punctulate; side margins narrowly reflexed. Elytra finely rather closely punctate; lightly striate, the striæ finely somewhat distantly punctate. Beneath more densely finely punctate. Length 5-7.5 mm.

California, Pasadena (Fenyes); San Diego (Blaisdell).

Only three examples of this apparently rare species have been seen. It is our largest species and departs a little from the typical species of the genus in its slightly longer outer joints of the antennæ, forming a feebly defined club.

2. **X. pallidus** Lec.—Form narrow, oblong, nearly as in *peltatus*, but smaller; pale ferruginous, pubescence well developed. Antennæ strongly acutely serrate, "nearly as long as the body in the male;" eyes large and convex, width of front subequal to their vertical diameter in the male. Anterior margin of the metasternum angulate at middle, the angle a little obtuse and well defined. "Head and thorax densely punctulate, elytra equally densely and somewhat rugosely so;" elytral striæ fine, evidently punctate. Length 2.5-3 mm.

Lower California (Cape San Lucas).

The above short description is a transcript of some brief notes made upon the LeConte type and upon a second example from the same source in the Ulke collection, together with one or two points taken from the original description, the latter enclosed in quotation marks. The length of the antennæ as given by LeConte seems somewhat excessive, but I unfortunately neglected to investigate the accuracy of his statement.

3. **X. mucoreus** Lec.—Dark brown or piceous, legs dark rufous, antennæ and palpi paler; form precisely as in *peltatus*, with which it is closely allied, differing only as follows: Pubescence much denser and more sericeous; eyes larger,

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separated on the front in the male by only about one-third more than their vertical diameter; antennæ a trifle more acutely serrate; anterior raised margin of metasternum distinctly angulate at middle. Length 3.5–6 mm.

This species has been found only in the southern portions of our territory, occurring from Florida (Haw Creek) to Louisiana (Covington) and Texas (Columbus and Brownsville).

The above measurements are the extremes in the series of nine specimens before me. LeConte's type from Louisiana (in the Ulke collection) is a little larger than the largest of these, but seems to be identical. As stated by LeConte the head is a little more evidently impressed beneath than in *peltatus*.

4. **X. peltatus** Harris.—Brown, or reddish brown, elongate-oblong, pubescence fine, sericeous, pale fulvous, moderately plentiful but not concealing the surface color. Terminal joints of both maxillary and labial palpi elongate, fully twice as long as wide, very little dilated apically, the apex strongly oblique and pointed, the inner angle broadly rounded. Antennæ moderately serrate, joints 3-10 triangular, the third and outer joints a little elongate, the intermediate ones about as wide as long, terminal joint elongate-oval or subfusiform. Eyes large and convex, the width of the front much less than twice their vertical diameter in the male, and a little greater than twice their vertical diameter in the female. Head finely rather densely punctate, feebly obtusely carinate at middle. Prothorax transverse, moderately narrowed in front, disk convex, broadly impressed each side before the basal margin, leaving the median line more convex; side margin very narrow, not reflexed; surface rather dull, finely sparsely punctate, the interspaces densely minutely punctulate. Elytra finely closely punctate and with fine lightly impressed striæ which are finely not closely punctate. Beneath densely finely punctured and pubescent; anterior raised marginal line of metasternum broadly arcuate at middle. Length 3.4–5 mm.

Occurs throughout the eastern United States from Canada to Texas. The following localities are represented in the material studied. Massachusetts, New York, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, Georgia, Canada, Ohio, Kentucky, Illinois, Louisiana, Texas.

5. **X. harrisii** n. sp.—There is nothing of moment to add to the characters given in the table for the separation of this species from *peltatus*. The two have hitherto been confused in collections, though abundantly distinct. It is quite impossible to determine with certainty to which the name *peltatus* was originally given, but I have used it for the species now bearing this label in the LeConte collection. Length 3.7–5.5 mm.

Harrisii is less widely distributed than *peltatus*, being more exclusively northern in range. The following localities are known to me: New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Kentucky, Ohio, Michigan, Canada.

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6. **X. fucatus** Lec.—Elongate-oval, varying in color from rufotestaceous to black. The thorax is rarely rufous, with the elytra black, suture rufescent, or the elytra may be paler than the thorax. Pubescence fine, short and rather sparse. Terminal joint of maxillary palpus elongate, form nearly as in *peltatus*; terminal joint of labial palpus similar but a little less elongate. Antennæ acutely serrate, the intermediate joints almost twice as wide as long in the male, slightly wider than long in the female. Eyes small, not prominent, separated on the front by about five times their longest diameter; head densely, subrugosely punctate and vaguely obtusely carinate. Prothorax strongly transverse, median line feebly elevated at base, sides flattened and explanate but scarcely reflexed, moderately arcuate, the hind angles broadly rounded; surface densely finely punctured and with shallow larger punctures, which are usually sparse or even scarcely evident at the middle, but become predominant at sides. Elytra finely alutaceo-rugose, deeply, finely striate, the striæ scarcely evidently punctate, intervals nearly flat, at least on the disk. Metasternum coarsely rather closely punctured, finely sulcate at middle; ventral surface finely punctate. Length 2.5–5 mm.

Very widely dispersed, occurring throughout the northern United States and Canada, and extending down the Pacific Coast to Southern California. It is apparently rare in New England, and I have seen no specimens from New York, although it must occur there. It is given in Smith's New Jersey list as rare in the Orange Mountains, but does not appear in either the Washington or southwestern Pennsylvania lists. Dury records it from Cincinnati, and I have seen it from Illinois, Canada and various localities in Michigan and the Lake Superior region, the latter being the type locality. Other localities represented before me are Kansas; Brownsville, Texas; Colorado, Wyoming, Washington State and California, as far south as San Diego.

A good deal of variation within somewhat narrow limits is observable in the material at hand, and I have little doubt that several closely allied species are involved; I am, however, quite unable to define them at present. Among the Californian representatives alone there are no less than five forms that are possibly good species, but they are either present in single specimens or in one sex only, or are connected by intermediates in such a way that nothing definite can be said.

7. **X. pubescens** Lec.—Oval, convex, piceous throughout or with the elytra dark rufous, integments opaque, pubescence yellowish gray and rather dense. Antennæ broadly acutely serrate; eyes small, remote, not prominent; head longitudinally densely substrigose, not carinate. Prothorax very convex, side margins not at all flattened or reflexed, surface densely finely subrugosely punctured. Elytra deeply finely striate, striæ not evidently punctured, inter-

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spaces nearly flat, finely rugulose. Beneath densely punctulate and pubescent. Length 2.7–3 mm.

Texas, Bosque County—Belfrage.

A small stout species with very convex prothorax, which, unlike all the other small eyed species, is not at all flattened at sides, the margin very narrow. The pubescence is denser than in any other of the allied forms, except *gracilipes*, which is more elongate and otherwise very different as indicated in the table.

8. **X. lugubris** Lec.—Allied to *fucatus*, but smaller and more elongate. The antennæ are subpectinate in the male, acutely serrate in the female, the intermediate joints in this sex being about as strongly transverse as in the male of *fucatus*. The sides of the thorax are a little less flattened and somewhat less strongly rounded than in *fucatus;* sculpture and vestiture nearly as in the latter species. The line of erect hairs on the first two ventral segments in the male is peculiar to this species. The color is black in all specimens seen. Length 2.5–3 mm.

Massachusetts (Tyngsboro); Michigan (Detroit and Marquette); Nebraska (LeConte collection).

9. **X. gracilipes** n. sp.—Elongate-oval, black; finely subrugosely punctured and dull; pubescence cinereous, dense. Antennæ subpectinate, nearly as in *lugubris* and in *Vrilletta convexa*. Terminal joints of palpi not compressed, very slender and elongate, acicular. Eyes small, not prominent, vertex obscurely subcarinate. Prothorax strongly transverse, side margin moderately reflexed. Tarsi very slender, slightly compressed, first joint subequal in length to the two following; second three-fourths as long as the first, third and fourth very short, together shorter than the second; fifth very elongate, subequal to the second and about five times as long as wide. Length 3.6 mm.

Described from a single example from Wyoming, submitted by Mr. Schaeffer. The facies of this species is in every respect that of typical *Xyletinus*, and it is therefore placed here for the present, notwithstanding the anomalous palpal and tarsal formation, which would perhaps warrant its separation as a distinct genus.

LASIODERMA Stephens.

Form oval, more or less elongate, moderately convex, pubescence moderate, subrecumbent. Terminal joints of palpi elongate, subparallel, the apex obliquely truncate. Antennæ serrate, but less strongly so than in *Xyletinus*, the outer joints not more elongate. Head rather large, deeply excavated beneath, with a posterior mediangular prominence; eyes small; epistomal suture arcuate, scarcely impressed. Prothorax evenly, strongly convex, front angles acute,

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or right, hind angles wanting; beneath deeply excavated for the head. Elytra not striate, punctuation confused. Prosternum very short before the coxæ, the latter and also the middle coxæ contiguous; metasternum rather short, not sulcate, suddenly declivous in front from side to side, the declivity limited by a raised line which does not extend upon the episterna; posterior margin sinuately prominent at middle, the prominence minutely notched; hind coxal plates gradually wider posteriorly. First ventral segment subequal to the fifth and a little longer at middle than the second; third and fourth shorter, equal; first ventral suture finer than the others and broadly arcuate posteriorly, thus narrowing the second segment at middle. Legs rather slender; tibiæ, at least the two anterior, compressed and grooved on the outer edge; first tarsal joint equal to the next two or three, fifth joint a little elongate. The tibiæ appear to have only a single terminal spur in the specimens examined, but the spurs are very difficult to see clearly and this observation needs verification.

Five species are known to me from our fauna, of which the largest is the well known cosmopolitan *serricorne*, the so called cigarette beetle. Our other species are all as yet very rare in collections.

Metasternum without obliquely transverse raised line posterior to that bordering the anterior declivity.
  Form more oblong, prothorax four-fifths as long as wide, color entirely piceous. 1. **dermestinum.**
  Form more oval, prothorax strongly transverse.
    Size much larger, color rufotestaceous or brownish red, rarely darker. 2. **serricorne.**
    Size smaller, piceous, head and thorax rufous ... .3. **bicolor.**
Metasternum with fine obliquely transverse raised line at middle.
  Piceous brown, head, thorax and lower surface rufous.....4. **semirufum.**
  Entirely rufotestaceous, size somewhat greater.....5. **hemiptycholdes.**

1. **L. dermestinum** Lec.—Quite strongly oblong; narrower and more convex than *serricorne;* color uniformly brownish piceous, antennæ and feet paler. Prothorax about four-fifths as wide as long, slightly narrower in front; hind angles indicated but the vertex rounded; front angles right. Pubescence fine, gray, less developed than in *serricorne;* surface finely punctulate, the punctures sparsely intermixed with slightly larger ones. Length 2.75–3.25 mm.

Lower California (Cape San Lucas).

The only specimens seen are those in the collections of LeConte and Ulke, and I know of no specimens other than those taken many years ago by Xantus.

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2. **L. serricorne** Fab.—Elongate-oval, moderately convex, rufotestaceous or brownish red, pubescence moderate, subrecumbent. Head broad, eyes small, not prominent; antennæ rather narrow, first joint large, second and third smaller, the latter distinctly triangular; fourth to tenth about as wide as long, the intermediate ones slightly widest; eleventh oval, slightly longer than the tenth. Punctuation of entire upper surface fine, uniform, not dense, the punctures separated by from one to two times their own diameters. Anterior tibiæ distinctly widened and compressed toward the apex, the outer apical angle obtuse. Length 2.2–3 mm.

Widely dispersed over the globe by commerce, occurring more commonly in and about commercial centers. It depredates like *Sitodrepa panicea* on a variety of dried vegetable products, but is especially injurious to tobacco.

The following localities are represented in the material studied: Massachusetts, New York, Pennsylvania, Michigan, Florida, Texas, Louisiana, California.

3. **L. bicolor** n. sp.—Differs from *serricorne* very little in sculpture and vestiture, but is a little broader, uniformly smaller, and differently colored, the head, prothorax and appendages being always rufous, the rest of the body piceous. Length 1.5 mm.

Peekskill, New York (Sherman); Pennington Gap, Virginia (Hubbard and Schwarz).

Three examples only; one from the former locality in my own collection and two from the latter in the National Museum collection.

4. **L. semirufum** n. sp.—Rather more elongate than *serricorne* and much smaller. The elytra are piceous-brown, the head, prothorax, under surface and appendages rufous. Sculpture and vestiture as in *serricorne*, except that the pubescence is a little shorter and more truly recumbent and the punctuation a little sparser. Length 1.5 mm.

Pennsylvania, District of Columbia, Maryland, New Jersey (Anglesea); Ohio (Cincinnati).

Nearly similar to *bicolor* in coloration, but narrower and with a fine raised metasternal line extending from the side margin obliquely inward and backward, becoming evanescent toward the middle of the metasternum, where it bends slightly forward.

5. **L. hemiptychoides** n. sp.—Very closely allied to *semirufum*, from which it differs in no notable way, except color and somewhat larger size. The form seems to be just perceptible narrowed posteriorly, parallel in *semirufum*, the pubescence more prostrate and slightly less sparse, the punctuation of the head a little finer and sparser, while that of the elytra is perhaps a little closer than in *semirufum*. The fascies is strikingly like some of the smaller species of *Catorama* (*Hemiptychus*). Length 1.3–1.9 mm.

New Jersey (Anglesea); Maryland (Bladensburg).

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MEGORAMA new genus.

Form robust, cylindric oval, terminal joint of maxillary palpi a little elongate, obliquely truncate, the inner angle broadly rounded; terminal joint of labial palpi similar but a little wider. Antennæ 11-jointed, stem not serrate, three outer joints enlarged, varying in form sexually and specifically. Eyes nearly as small in the female as in *Xyletinus*, obviously larger in the male; front strongly acutely margined over the antennæ; epistomal suture arcuate, not impressed and indistinct. Prothorax transverse, disk broadly but obviously gibbous posteriorly when viewed in profile (feebly so in *ingens*); front angles right or a little acute, hind angles broadly rounded, side margin narrowly reflexed in front becoming somewhat wider posteriorly. Elytra confusedly punctate, not striate. Head deeply excavate beneath for the antennæ; front and middle coxæ contiguous; metasternum declivous anteriorly from side to side, the declivity not margined posteriorly, except at the middle in *simplex;* episterna broadly exposed, wider and declivous in front; hind coxal plates feebly dilated internally; first, third and fourth ventral segments subequal, second a little longer, fifth still longer; sutures nearly equally strong, but the first segment as usual lacks the short marginal fringe, which protects the connecting membrane in the other sutures, indicating that the first two segments are really more or less connate. Legs moderately stout, all the tibiæ grooved externally; basal joint of tarsi equal to the next two; the second equal to the two following; terminal joint about as long as the second.

Pubescence of upper surface entirely recumbent; prothoracic disk granulate at middle, elsewhere simply punctate.
  Anterior declivity of metasternum limited posteriorly by a raised line which is distinct at middle but becomes obsolete externally...1. **simplex.**
  Anterior declivity of metasternum not limited posteriorly by a raised line.
    First ventral segment not carinate at middle; antennal club pectinate in the male .....2. **frontalis.**
    First ventral segment acutely longitudinally carinate at middle (male not known) .....3. **viduum.**
Pubescence of upper surface intermixed with short erect hairs; prothorax granulate over nearly its entire surface .....4. **ingens.**

1. **M. simplex** Lec.—Elongate oval, convex, blackish brown, with fine sericeous yellowish gray pubescence, which is uniformly recumbent. Antennæ in the male with the first joint curved and moderately dilated, the second longer and thicker than the third; third to eighth equal in thickness, the third longer, the others about as long as their width; ninth and tenth large, compressed, tri-

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angular, ninth as long as the five preceding united, tenth a little longer; eleventh as long as the tenth and a little narrower, oval, rounded at the tip. In the female the three outer joints are smaller, less broadly triangular, with the outer angle not acute, the tenth joint not longer than the ninth. Head finely evenly densely punctate; prothorax acutely granulate on the disk, the surface elsewhere finely, densely, simply punctate and alutaceous; elytra closely evenly punctate. Metasternum granulate at sides. Length 3.5-4.5 mm.

"Two specimens collected in Kentucky by Mr. J. H. Wild."

So far as I can ascertain there are no specimens of this species in collections other than the LeConte types. The occurrence of three other species of this genus in California, with none—so far as known—in the intervening territory is a somewhat remarkable instance in distribution, which is, however, closely paralleled in *Vrilletta*.

2. **M. frontalis** Lec.—Oblong-oval, dark brown or fuscous, with fine sericeous prostrate pubescence. Antennæ (♂) with the first joint stouter and curved as usual, second and third much smaller, elongate, the third a little more slender; fourth and fifth subequal and a little longer than wide, sixth to eighth transverse, together equal to the fourth and fifth united; ninth and tenth as long as sixth to eighth, and with an inner branch which is subequal in length to joints 1-8; eleventh slender and fully as long as the branches of the two preceding joints. In the female the ninth and tenth joints are moderately elongate, triangular, the eleventh elongate-oval. Head densely, finely punctulate. Prothorax granulate at middle of the disk, which is a little prominent posteriorly; surface elsewhere densely, evenly, rather finely punctate. Elytra finely closely punctate, with somewhat coarser punctures, which tend to arrange themselves in barely visibly impressed lines. Metasternum polished and not very closely punctate at middle, subalutaceous and moderately closely punctate laterally, the punctures somewhat unequal in size. Ventral surface moderately closely finely punctate. Length 3.25-5 mm.

Southern California, Santa Barbara (type); Pasadena. Occurs, though not common, at the latter place in May and June on *Quercus agrifolia*.

3. **M. viduum** n. sp.—Similar in most respects to *frontalis*, but of somewhat larger size. Antennæ (♀?) nearly as in *frontalis*, but with the ninth and tenth joints a little more elongate, about twice as long as wide, the outer angle a little less acute; coarser punctures not evident on the elytra; first ventral segment carinate at middle, the carina beginning on the intercoxal process and not quite reaching the apical margin. Length 4.75-6.25 mm.

California, Anderson Springs, Lake County (Fuchs); Los Angeles County (Coquillet); Claremont (Baker).

One example from each of the above localities. Judging from the small eyes, which do not vary appreciably in the three speci-

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mens, they are probably all females, it is therefore not possible to say if the carinate ventral is a sexual character; I am quite confident, however, that it is not. The form of the antennal club is so variable in the genus, that it would be mere guess work to predict its form in the male of the present species.

4. **M. ingens** n. sp.—Robust, subcylindrical, convex, moderately densely clothed with pale yellowish recumbent pubescence, intermixed throughout with very short suberect hairs of the same color. Antennæ (♂) with joints 1-8 as usual, ninth and tenth narrowly triangular, about twice as long as wide, the outer edge sinuate, the outer angle acute; eleventh distinctly longer, slender, subparallel, the apex acutely rounded; ninth and tenth joints united as long as the entire stem. In the female the ninth and tenth joints are more broadly triangular, about one-half longer than wide, the outer edge not or scarcely sinuate, eleventh oval; ninth to eleventh united, barely equal in length to the stem. Head finely closely punctate. Prothorax less obviously gibbous than in the preceding species; entire surface with larger punctures and granules, the interspaces minutely punctulate. Elytra finely, moderately closely punctate, with numerous larger punctures. Beneath moderately closely punctured, the punctures of two sizes as above. Length 6.5-8 mm.

California, San Diego (Blaisdell); Pasadena (Fenyes).

This fine large species is quite distinct from all others of the genus by its dual system of pubescence and punctuation. Two examples in the Horn collection bear the label *frontalis*, and it is quite possible that both *ingens* and *viduum* may be present in other collections under the same name.

Dorcatomini.

Broadly speaking, the members of the present tribe are distinguished from all others by their highly developed contractile power. The antennæ (except the basal joint) and oral organs are completely shut in in repose, the head being strongly deflexed and received into a deep cavity in the prothorax, and the legs are withdrawn into appropriate excavations of the trunk. The form is usually broadly oval, varying in one direction to elongate oval or oblong in *Eupactus* and *Petalium*, and in the other direction to the rotundate form of *Cœnocara*. Head excavated beneath for the antennæ or not. Antennæ varying from 8-jointed to 11-jointed, the three outer joints forming a conspicuous club of variable form, the intermediate joints often very small and indistinct. The front coxæ are sometimes contiguous, in which case the antennæ are received between them and the more or less impressed or excavated under surface of the head;

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or they may be widely separated, the antennæ received between them and extending upon the concave and recessed surface of the metasternum. Metasternum frequently produced between the middle coxæ into a broad lobe which is commonly narrowed behind by deep grooves which receive the middle tarsi. First ventral segment excavated (rather feebly in *Petalium*) for the hind feet, and usually only visible narrowly at the middle. Legs rather slender, the tibial spurs small or wanting; tarsi rather robust and usually very short.

As here constituted this tribe assumes a far greater complexity than it possesses in the LeConte and Horn Classification, where only the three genera *Dorcatoma*, *Cœnocara* and *Byrrhodes* are referred to it. In an attempt at an orderly arrangement of our genera of Anobiinæ the most puzzling problem that arises is the proper disposition of the genera *Petalium*, *Theca* and *Eupactus*. LeConte, while recognizing a certain affinity with the Dorcatomini, chose to regard them as aberrant members of the Anobiini, his most cogent reason being that the mandibles do not lie in close apposition to the metasternum in repose as is the case in both the Xyletinini and Dorcatomini as defined by him. At the beginning of his paper LeConte says, "Considering the variation in form and structure of the antennæ in genera which are evidently closely related I have regarded the manner in which the body is contracted in repose as of fundamental importance in the classification of the genera." This basis for classification is an eminently rational one in the present family, but the author is evidently following the letter rather than the spirit of the principle involved when he places in the Anobiini, genera like *Theca* and *Eupactus*, in which the body is as perfectly contractile and the members as completely protected as in *Dorcatoma* or *Cœnocara*. Mulsant and Rey in their admirable work on the Térédiles of France divide the Anobiinæ primarily into the "Anobiens" and "Dorcatomiens" the latter being sharply separated from the former by the possession of metasternal and ventral pits for the reception of the four posterior feet. This method of division has been accep ted by subsequent European authors, and I am convinced after a careful study of our own genera that it is the most simple as well as the most natural means of defining the Dorcatomini. *Theca* then should be returned in our classification to the latter tribe where it was originally placed by Mulsant and Rey. By the same reasoning *Eupactus* and *Petalium* should pass to the same tribe, as should also

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Catorama and *Protheca*, placed by LeConte in the Xyletinini. Granting that *Petalium*, *Theca* and *Eupactus* should be included in the Dorcatomini, what then is their relation to each other and to the other genera of that group. The three genera in question possess in common a peculiar character which was noted by LeConte in *Theca* and *Eupactus*, but was evidently overlooked in *Petalium*, in which, indeed, it is more feebly developed. This consists of the expansion of the apices of the anterior coxæ into flat transverse horizontal plates which are coarsely sculptured and form a portion of the exposed lower surface of the insect when contracted. The articulation of the trochanter with the coxa is posterior rather than apical, and the mandibles lie in contact with the coxal plates in repose This extraordinary structure seems of sufficient importance to warrant the close association of these genera, but it must be admitted that there is little else that indicates either mutual relationship or any close affinity to the other genera of the tribe. The singular structure of the antennal club and the double ventral sutures in *Eupactus*, the mesosternal structure in *Theca* and the enormously developed metasternal lobe in *Petalium* are all characters so unique in kind or in degree of development as to show a somewhat unusual individuality within tribal limits. I have placed these three genera at the head of the Dorcatomini, though recognizing that they constitute an obvious interruption to an orderly sequence of genera, *Lasioderma* and *Megorama* of the Xyletinini forming a natural transition to *Catorama* and *Cryptorama* of the Dorcatomini. They seem equally out of place, however, in any other position, and since we cannot avoid the necessity of a linear arrangement it has seemed best to give them their present position because of a certain affinity to the Anobiini discernible in the elongate form, feebly elevated disk of the prothorax, internally widened posterior coxal plates and the less deeply excavated first ventral segment of *Petalium*.

Our fauna is far richer than the European in this tribe, which is there represented by seven genera and thirty species as compared with our eleven genera and upward of one hundred species. Of the European genera, four—*Mesothes*, *Mesocœlopus*, *Anitys* and *Eutheca*—do not appear with us. Both *Mesothes* and *Mesocœlopus* differ from all our genera in the uniformly serrate antennæ without enlarged outer joints; the former is elongate, the elytra with a sin-

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gle lateral stria, the latter oval, without lateral striæ. I have seen no example of *Mesothes*, but specimens of *Mesocœlopus collaris* resemble rather strongly certain species of *Cryptorama*, and the genus should stand between *Catorama* and *Cryptorama*, from the latter of which it differs, aside from antennal formation, in its rather widely exposed met-episterna. *Eutheca* is also unknown to me in nature, but from description it must be very close to if not identical with our *Eupactus*, in which case LeConte's name being the older must prevail.

Anitys should follow *Eutylistus* in our arrangement. It differs from the latter in its very strongly globose form, sides of pronotum without marginal bead, tarsal joints gradually decreasing in width, short recumbent pubescence, and in several other respects.

Our genera may be tabulated as follows:

Anterior coxæ expanded at apex into transverse horizontal plates, which are not concealed in repose; the articulation with the trochanter posterior.

Metasternum with broadly expanded anterior lobe which covers the mouth in repose; hind coxal plates wider internally ..... **Petalium.**

Metasternum with a short anterior lobe which does not reach the mandibles.

Anterior coxæ distant; two outer joints of antennal club closely united; mesosternum depressed; hind coxal plates wider externally. **Eupactus.**

Anterior coxæ contiguous; two outer joints of antennal club normally separated; mesosternum strongly elevated into a central keel, which is horizontal and attains the level of the metasternum; hind coxal plates narrow and parallel ..... **Theca.**

Anterior coxæ not expanded into apical plates, and entirely shut in in repose; the articulation with the trochanter apical.

Anterior coxæ contiguous, head impressed or excavated beneath for the antennæ.

Elytra with confused punctuation; metasternum not lobed in front; epipleuræ not foveate for the hind knees; ventral sutures straight.

Antennæ 10-jointed; mesosternum with intercoxal hook-like process; metasternal episterna widely visible ..... **Catorama.**

Antennæ 11-jointed; mesosternum without intercoxal hook; metepisterna concealed, or at most very narrowly visible posteriorly. **Cryptorama.**

Elytra striate punctate; metasternum deeply narrowly excavated for the middle tarsi, causing it to appear broadly lobed in front; epipleuræ foveate for the hind knees; ventral sutures arcuate at middle.

Metepisterna narrow, parallel; pubescence appressed. **Stichtoptychus.**

Metepisterna narrowly triangular; pubescence more or less bristling. **Prothecа.**

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Anterior coxæ widely distant, the antennæ received between them.
Prosternum produced behind into two long slender horn like processes; antennæ 10-jointed ..... **Dorcatoma.**
Prosternum truncato-emarginate behind; antennæ 8-, 9-, or 10-jointed.
Eyes minutely emarginate.
Elytra without discal striæ ..... **Eutylistus.**
Elytra with discal striæ ..... **Byrrhodes.**
Eyes deeply acutely incised, the fissure extending to or beyond the middle. **Cænocara.**

PETALIUM LeConte.

The chief structural character of this genus, and one by which it may be distinguished from all others, is the strongly produced and broadly expanded metasternal lobe; but aside from this the species possess a perfectly characteristic facies which makes them easily recognizable. The form is parallel, more or less elongate, rather strongly convex, with sparse or moderate recumbent pubescence. Head deeply sunk in the prothorax, not visible from above, eyes moderate in size, though larger in the male, not very convex. Antennæ about one-third the length of the body, 11-jointed, the first joint long and moderately thick; second globose, as wide as the first; third and fifth transversely triangular; fourth, sixth and seventh much narrower and smaller, the seventh usually evidently larger than the sixth; eighth smallest; ninth and tenth similar, triangular, longer than wide, and each about as long as joints 3–8 inclusive; eleventh a little longer, oval, pointed. Joints 9–11 are together as long as or somewhat longer than all the preceding. Terminal joint of both maxillary and labial palpi moderately elongate, with nearly parallel sides, the apex bidentate because of a deep semi-circular emargination. Prothorax as wide as the elytra, sides parallel, hind angles sharply defined and nearly right, front margin thickened and a little reflexed, disk at most feebly gibbous at middle with shallow oblique impressions at each side. Elytra punctate striate, punctures becoming smaller or nearly disappearing at apex, the two outer lines more deeply impressed. Prothorax strongly excavated beneath for the reception of the head; prosternum short, front coxæ widely separated, their summits forming small, very narrow transverse plates, the articulation with the trochanters posterior. Mesosternum deeply abruptly excavated longitudinally, invisible without dissection. Metasternum large, produced between the middle coxæ in a broadly expanded lobe which covers the mouth and anterior tarsi in repose, transversely grooved

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in front for the reception of the middle tibiæ and tarsi. Epipleuræ foveate for the middle and hind knees. First ventral segment short, the hind feet received in shallow impressions; second segment long, usually but little shorter than the three following united; fifth a little longer than the third or fourth, which are subequal. Femora and tibiæ subequal in length and rather slender; tarsi short, about one third the length of the tibiæ, first joint longer than wide, the following joints transverse, the fifth strongly dilated.

In all of our species except *schwarzi* there is a short arcuate and oblique deeply impressed line at the sides of the prothorax behind the front angles. In *schwarzi* this arcuate impression is reduced to a small deep fovea near the middle of the side margin.

Attention has been called under *Ozognathus* to the fact that the genus *Micranobium* of Gorham is composite and unnecessary, his *exiguum* being an *Ozognathus* and *pulicarium* a *Petalium*. M. Pic* who now possesses the greater part of the Gorham collection has noted the close similarity between *M. pulicarium* and the Syrian *Rhadine*† *parmata*, and properly concludes that they are generically identical; but he, like Gorham, appears to be ignorant of the earlier *Petalium* Lec., the description of which is perfectly characteristic. This genus is thus seen to be widely dispersed and is especially well developed in the American continent. In addition to the species described by Gorham from Central America, Pic alludes to a number of others in his collection from Mexico, Brazil and the Argentine Republic. To these, names are given, but the characterizations are insufficient for their acceptance unless supported by further description. In our own fauna there is a considerable number of species, but just how many it is impossible to say; for these little things conform so closely to type while exhibiting a remarkable amount of variation in minor details that specific limits must for the present be in a measure opinionative. Six forms are described below, most of which seem separable with a fair degree of certainty. *Bistriatum* is, however, still very complex, and it and *seriatum* approach one another very closely in some of their variations.

* L'Echange, No. 227, Nov. 1903, p. 171.

† The name *Rhadine* is preoccupied as well as a synonym, having been used by LeConte for a section of *Platynus*.

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Second ventral segment but little longer than the third and fourth united, and slightly shorter than the metasternum at sides.

Black, shining, subglabrous; form relatively stout, prothorax evenly convex without oblique discal impressions .....1. **schwarzi.**

Second ventral segment not much shorter than the three following united, and more or less evidently longer than the metasternum at sides.

Elytral interspaces with a single series of smaller but distinct punctures; pronotum more coarsely, less densely punctate; second ventral segment conspicuously longer than the metasternum at sides.....2. **yuccæ.**

Elytral interspaces usually with fine confused punctuation, which is often indistinct; pronotal punctuation denser and finer; second ventral segment less obviously longer than the metasternum at sides.

Punctures of elytral series strong, close set, and distinct quite to the apex, though becoming finer posteriorly as usual; the two lateral striæ less conspicuously deeper than the discal.

Form a little stouter; stem of metasternal lobe relatively wider (Atlantic States).....3. **seriatum.**

Form narrower, stem of metasternal lobe narrower, about half as wide as the lateral portion of the lobe.....4. **californicum.**

Punctures of elytral series finer, less close set, and becoming nearly obsolete apically; the two lateral striæ conspicuously deeper.

Form narrower; metasternum sulcate in posterior half; color usually nearly black, with legs and antennæ rufous or yellowish.

5. **bistriatum.**

Form wider; metasternal sulcus obsolete; color brown..6. **brunneum.**

1. **P. schwarzi** n. sp.—Black, shining, and almost completely glabrous; form more robust than usual. Head not reticulate-punctate, the punctures in mutual contact anteriorly, but distinctly separated on the occiput. Eyes rather small, width of front between them from one and one-third to one and one-half times their vertical diameter. Prothorax evenly convex, without trace of discal oblique impressions; front margin not evidently thickened or reflexed, lateral arcuate impressed line reduced to a small perforate marginal fovea; punctures close at sides and in front, evidently separated on the disk and posteriorly. Elytral striæ completely unimpressed, except the two lateral ones, the strial punctures fine and equal from base to apex and scarcely larger than those of the interspaces, with which they tend to become somewhat confused, especially toward the suture. Metasternum rather strongly simply punctate, not at all reticulate; abdomen more finely and closely punctate, the punctures unequal in size. Second ventral segment scarcely as long as that portion of the metasternum at sides between the anterior transverse groove and the hind coxal plates. Length 1.4-1.7 mm.

Victoria, Texas. Collected by Mr. Schwarz.

In two of the four examples before me the eyes are slightly larger and the front correspondingly narrower, as indicated in the description above; these are doubtless males.

The form is more robust than in any other species known to me, the length being only slightly greater than twice the width, and

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this combined with the black polished glabrous surface, evenly convex thorax with front margin not thickened, strong but simple punctuation of the head, pronotum and metasternum, and fine subconfused punctuation of the elytra, make this species at once recognizable and mark it as widely distinct from all others of the genus. I have with great pleasure dedicated this interesting addition to our fauna to Mr. Schwarz.

2. **P. yuccæ** n. sp.—Blackish brown, opaque, nearly as robust as *schwarzi* and distinctly stouter than any of the following species. Head coarsely densely punctate, front about one-third wider than the vertical diameter of the eye. Pronotum coarsely punctate, the punctures densely placed, except at the posterior portion of the disk where they are not in mutual contact; front margin feebly thickened but scarcely reflexed; oblique discal impressions nearly wanting. Strial punctures of elytra fine and decreasing only slightly in size toward the apex. Interspaces with a single row of punctures that are as a rule a little more widely spaced than those of the striæ and but very little smaller; each puncture bears a short pale hair. Metasternum punctured throughout, more finely at middle; ventral surface with larger and smaller punctures rather closely placed. Second ventral segment much longer than the metasternum at sides, the latter length being scarcely greater than the combined length of the third and fourth ventrals. Length 1.35–1.9 mm.

Florida (Key West, Punta Gorda and Jupiter). Collections of Horn and Hubbard and Schwarz.

I am unable to distinguish the sexes in the material at hand. *Yuccæ* is nearly as robust as *schwarzi* and in the form and sculpture of the thorax, and the punctuation of the lower surface resembles it more closely than do any of the following species. Its habits are indicated by the specific name.

3. **P. seriatum** n. sp.—Moderately elongate, brown, distinctly though sparsely pubescent. Head and prothorax densely punctate throughout, the pronotal disk a little prominent, with well defined oblique impressions each side; front margin thickened and reflexed. Punctures of elytral striæ strong and close set, diminishing in size toward the apex, but well defined throughout. Discal striæ slightly, two lateral striæ more strongly impressed. Interspaces confusedly finely punctulate. Punctuation beneath finer than in the two preceding species, especially on the central portion of the metasternum. Eyes evidently larger in the males, the width of the front being in this sex evidently less than the vertical diameter of the eye, while in the female it is a little greater than the diameter of the eye. This species as a rule is decidedly larger and a little stouter than *bistriatum*, but certain specimens show a variation in the direction of the latter species in the smaller size and less coarsely punctured elytral striæ. In all, however, so far as the material at hand allows me to judge, the eyes are relatively larger and the front narrower than in the corresponding sex of *bistriatum*; the color is here always brown, in typical *bistriatum* black. Length 1.9–2.3 mm.

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This species occurs from Massachusetts to Florida and Texas. The following specific localities are represented in the material at hand: Wakefield, Tyngsboro, Dracut and Marion, Massachusetts; Staten Island, New York; Pennsylvania; New Jersey; Washington, D. C.; Penington Gap and Ft. Monroe, Virginia; Cincinnati, Ohio; Georgia; Birmingham, Alabama; St. Lucia, Florida; Covington, Louisiana; Columbus, San Diego, Victoria and Brownsville, Texas.

4. **P. californicum** n. sp.

Very similar in color and sculpture to *seriatum*. The form is, however, sensibly narrower, averaging very nearly two and one half times as long as wide, while in *seriatum* the length is about two and three-tenths times the width. The sculpture of the head is apparently a little shallower and more reticulate in *californicum*, the eyes scarcely different. The elytral striæ are scarcely visibly impressed on the disk, the punctures never as large as they sometimes are in *seriatum*. The stem of the metasternal lobe is usually narrower in *californicum*, and though somewhat variable in both species it averages about half the width of the lateral portion in this species, while in *seriatum* it is frequently subequal in width to the lateral portion, and in all specimens examined it is distinctly more than half as wide. Length 1.8–2.25 mm.

California ("Los Angeles Co.," Pomona, San Bernardino Mts., Kaweah). A specimen from Castle Crag, California, in Dr. Fenyes' collection is a little smaller and more feebly striate. It is for the present doubtfully referred here.

5. **P. bistriatum** Say.—Moderately elongate, black, legs and antennæ rufous or rufotestaceous; upper surface feebly shining; pubescence fine and sparse, but evident. Head coarsely densely reticulate-punctate. Front slightly wider than the vertical diameter of the eye in the male; eyes smaller than usual in the female, the front nearly or quite one and one-half times the diameter of the eye. Disk of prothorax slightly elevated at middle, the oblique impressions well defined; front margin thickened and evidently reflexed, punctuation densely crowded throughout. Elytral striæ unimpressed, except the two marginal ones, which are quite deeply so and contrast strongly with the others. Strial punctures fine, diminishing in size posteriorly and becoming nearly or quite obsolete, toward the apex. Interspaces usually very finely sparsely confusedly punctulate, but occasionally the interstrial punctures resolve themselves into a nearly regular line. Beneath finely punctulate, except the sides of the metasternum and the propleuræ. Length 1.6–2.1 mm.

Occurs nearly everywhere in our fauna from northern New England to Florida and Texas.

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The above description, measurements and habitat apply to the typical form, which as indicated is black or very nearly so. A few individuals have been seen with rufopiceous thorax, while others are entirely brown; these latter are perhaps immature. With the type form I have thought best to place several others which differ from it and from each other in a most puzzling way. I have little doubt that one or more good species are represented, but the number of specimens is as yet hardly sufficient to establish the constancy of the small differences noted, and their tabulation would now be difficult. For the sake of a more definite cabinet arrangement by those who have sufficient material the following subspecies may be recognized:

Arizonense var. nov.—A small series collected by Hubbard or Schwarz at Oracle and Bright Angel, Arizona, differs from the type form in being of a uniform brown color; the head more coarsely reticulate-punctate, and the eyes a little larger and less widely separated. The length is uniformly very nearly 2 mm.

Bicolor var. nov.—Size small (1.3–1.5 mm.), dull black above, rufous beneath. Here again the eyes are relatively larger in both sexes than in typical *bistriatum*. This form is apparently confined to subtropical Florida (Key West, Cedar Keys, Biscayne and Capron), and all specimens are from the Hubbard and Schwarz collection.

Debile var. nov.—Very small (1.1–1.5 mm.). Pale brown, more slender and parallel than in any other form known to me. The cephalic reticulation is very coarse. Specimens here referred are from "Florida;" Pensacola, Florida; "Georgia;" "Texas;" Goliad, Texas.

6. **P. brunneum** Horn.

Brown, stouter than *bistriatum* and more pubescent. The punctures of the elytral series are fine and nearly disappear at the middle; the interspaces are almost invisibly confusedly punctulate. There is only a faint trace of the median posterior metasternal sulcus, distinct in all our other species. In this latter respect *brunneum* is like the Mexican *apicalis* of Pic, in fact the two species are exceedingly similar in other respects. I am unwilling to unite them on the basis of the single example of *apicalis* sent me by M. Pic.

Lower California. San José del Cabo (type); Santa Rosa, two examples sent me by Mr. Beyer.

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EUPACTUS LeConte.

Elongate oval, very convex, either glabrous or with very fine short appressed pubescence. Head with oblique impressed frontal lines extending forward to the sharply impressed clypeal suture. Eyes rather large, moderately convex. Antennæ 11-jointed; first joint large, curved; second scarcely narrower and much smaller, somewhat compressed and a little produced inward; third much narrower, elongate-triangular; fourth to eighth as wide as the third, short, transverse, the third, fifth and seventh sometimes subequal to, sometimes obviously larger than the fourth, sixth and eighth; ninth much wider, compressed, parallel in outer two thirds; and about equal in length to joints 3–8 united; tenth and eleventh closely united, forming an oblong mass rounded at apex, as wide as and a little longer than the ninth. Palpi with the last joint more or less elongate triangular, the apex somewhat obliquely truncate, and sometimes emarginate. Prothorax narrowed in front and deeply excavated beneath for the head, side margins very narrow and not visible from above; disk evenly convex. Elytra irregularly punctate, not infrequently with one or two deep marginal striæ; very rarely with discal striæ. Head not impressed or excavated beneath for the antennæ. Anterior coxæ widely separated, their apices expanded into large transverse horizontal plates which are exposed when the body is contracted, and are sculptured like the rest of the lower surface. Mesosternum nearly vertical, channeled at middle. Metasternum long, not sulcate, notched at middle of hind margin, produced between the middle coxæ into a short non-expanded lobe which is emarginate in front for the ends of the antennæ; sides abruptly declivous and hollowed out for the reception of the middle legs, the excavation limited by an elevated line; episterna narrowly triangularly exposed. Plates of hind coxæ gradually widened externally; first ventral segment deeply excavated throughout its width for the hind legs, segments 2–4 gradually decreasing in length, fifth longer; third and fourth sutures double. Legs slender; tarsi very short, robust, first joint scarcely longer.

The difficulty of placing this singular genus has been already alluded to in the preliminary remarks upon the Dorcatomini. At the time of describing the genus two species only were known to LeConte, though a third, *pudicus* Boh. was assumed to belong here. The genus is now known to occur in our territory from New Eng-

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land to Lower California. It has not been found in California proper nor—roughly speaking—anywhere to the north and west of a line drawn from Southern California to Minnesota. It is probable that Boheman in describing the antennæ of his *Anobium pudicum* as having but two elongated terminal joints overlooked the junction between the closely connected tenth and eleventh joints and that LeConte was quite correct in referring this species to *Eupactus*. A careful study of Boheman's description indicates that his species is more nearly allied to *amœnus* and *mixtus* than to any others in our fauna, but I cannot convince myself that it applies to either of these. The locality named—"St. Francisco"—is more than doubtful.

The genus is probably well represented in Mexico and Central America, from which region several species have been described in the "Biologia" by Gorham, who created for them quite unnecessarily the genus *Thaptor*. More recently others have been described by Pic from Mexico, Colombia, Peru, Chili and Australia; whether these are all strictly congeneric cannot possibly be determined from the descriptions. Nine species are known to me from within our faunal limits, separable as in the subjoined table:

Elytra with two more or less deeply impressed marginal striæ.
Black, coarsely punctate, pubescence nearly imperceptible.....1. **nactus.**
Brown, finely punctulate, distinctly pubescent.
More robust, discal striæ obsolete.....2. **advenus.**
More elongate, discal striæ traceable but faint.....3. **obsoletus.**
Elytra without marginal striæ.
Pubescence distinct, punctuation dual.
Finer punctures relatively few and inconspicuous; color dark brown, size smaller (3–3.7 mm).....4. **amœnus.**
Finer punctures numerous and conspicuous; color black, size larger (4.5 mm.).....5. **mixtus.**
Surface entirely glabrous, punctuation simple.
Vertex carinate, last ventral segment with impressed marginal line.
6. **nitidus.**
Vertex not carinate, last ventral without impressed marginal line.
Metasternal process longer than wide; form moderately convex, punctuation strong and rather close.....7. **canonicus.**
Metasternal process wider than long.
Form more elongate, moderately convex, punctuation conspicuous.
8. **similis.**
Form stouter, very convex, punctuation exceedingly fine and remote.
9. **punctulatus.**

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1. **E. nactus** n. sp.—Oval, twice as long as wide; black, head rufopiceous, antennæ rufous; surface moderately shining and quite strongly closely punctate, each puncture bearing a minute fine appressed hair, which is scarcely visible under ordinary power. Head densely but not coarsely punctate, vertex not carinate. Prothorax coarsely and densely punctate at sides, less closely at middle. Elytra rather strongly punctate, the punctures similar in size to those on the thoracic disk and distant from one to two times their own diameters; two marginal striæ deeply impressed and nearly entire, becoming obsolete near the base. Beneath punctured as closely as above, the metasternum smoother at middle; metasternal intercoxal process about as long as wide, deeply parabolically emarginate. Length 2.6 mm.

Described from a single specimen taken by Mr. Beyer at San Felipe, Lower California.

2. **E. advenus** n. sp.—Elongate-oval, moderately robust, dark brown, opaque, finely feebly pubescent. The sculpture of the upper surface is excessively fine and dense, the individual punctures scarcely detectable; but intermixed sparsely over the disk of the elytra are somewhat larger punctures. Head flat between the eyes which are unusually large, their vertical diameter being subequal to the width of the front. Elytra with two remotely punctate marginal striæ, the outer one entire, feebly impressed at base, but quite deeply so toward the apex; second stria similar but becoming obsolete at apical fourth; within this is a faint short third stria. Sculpture and pubescence beneath nearly as above, the front coxal plates and prothoracic episterna more rugose as usual; the metasternum more shining, with the punctuation dual and better defined; the intercoxal lobe rather longer than wide and deeply narrowly emarginate. Length 3.7 mm.

Hab.—Florida (Miami).

A single specimen communicated by Mr. Beyer. The very large eyes undoubtedly denote the male.

3. **E. obsoletus** n. sp.—Narrowly oval, nearly two and one-half times as long as wide, brown, subopaque, finely feebly pubescent. Front moderately convex, finely closely punctate, width two and one-half (♀) or two (♂) times the vertical diameter of the eye. Prothorax rather coarsely closely punctate laterally, more finely at middle. Elytra with obsolete rows of closely placed punctures, the interspaces similarly punctate; marginal striæ two, with a short inner third stria composed of punctures; the two long striæ feebly impressed and defined by punctures toward the base, deeply impressed behind the epipleural lobe. Metasternum coarsely rather sparsely punctate at sides, finely sparsely so at middle, with intermixed minute punctures throughout; intercoxal process not quite as long as wide and moderately deeply triangularly emarginate. Length 2.1–3.5 mm.

Hab.—Cincinnati, Ohio Dury); Missouri (Horn collection); Covington, Louisiana (Soltau); Columbus and San Antonio, Texas (Hubbard and Schwarz).

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The rows of punctures on the elytra are usually very feebly defined though quite regular, but are traceable in each of the nine examples before me, and in some are quite readily made out. This species resembles *amœnus* very closely, but the latter is destitute of both discal and marginal striæ and the metasternal lobe is differently emarginate.

4. **E. amœnus** n. sp.—A little less elongate and of somewhat darker color than *obsoletus*; elytra without striæ, either marginal or discal. Metasternal lobe deeply semicircularly emarginate from side to side; sculpture otherwise substantially as in *obsoletus* Length 2.8-3.5 mm.

Arizona (Fort Grant and Oracle; Hubbard and Schwarz). The Fort Grant specimens are to be regarded as types. The single example from Oracle differs in one or two particulars but is probably identical.

5. **E. mixtus** n. sp.—Elongate-oval, twice as long as wide; piceous black; evidently, though sparsely and finely punctate. Prothorax densely rather coarsely and uniformly punctate at sides, the punctuation becoming finer and dual toward the middle; elytra without striæ, the punctuation dual, the larger punctures mutually distant, from one to two times their own diameters, the interspaces thickly finely punctulate. Lower surface sculptured much like the corresponding portions of the upper. Metasternal lobe broadly not deeply emarginate in circular arc. Length 4.5 mm.

Described from a single specimen sent me by Mr. Beyer, who collected it at Santa Rosa, Lower California

As compared with *amœnus* this species is slightly stouter, darker in color and much larger; the finer punctuation is also distinctly more abundant. If any three adjacent larger punctures are so joined as to enclose a nearly equilateral triangle, the space enclosed will be found to contain from four to six of the finer punctures, while in *amœnus* a corresponding area contains only one or two on the average.

6. **E. nitidus** Lec.—Elongate-oval, strongly convex, not quite twice as long as wide, black, pronotum sometimes dark rufous, surface throughout polished and glabrous. Punctuation simple, sparse and rather fine, as a rule, but becoming closer and evidently coarser toward the sides of the pronotum. Head moderately convex, the eyes distinctly larger in the male, as usual, vertex obsoletely carinate. Prothorax strongly narrowed in front, sides nearly straight. Elytra without striæ. Surface beneath polished and finely punctate, the punctures becoming coarser and more numerous toward the sides of the metasternum and at the middle of the first ventral segment, also toward the lateral margins of the following ventral segments, where coarser and finer punctures are intermixed.

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Last ventral segment with deep marginal impressed line or groove which is narrowly interrupted at middle. Legs densely finely punctured on their exposed surfaces. Length 2-3 mm.

Specimens of this widely dispersed and not uncommon species have been seen from Massachusetts, New Jersey, Pennsylvania, District of Columbia, Florida (Lake Mary), Ohio, Kentucky, Illinois, Missouri, Kansas (Onaga), Texas (Columbia and San Diego) and Arizona.

The Texas specimens and more especially those from Arizona are obviously more strongly and closely punctured than the typical eastern specimens, and I at first thought they might be separated as a distinct species, but further experience proves that it will be difficult to draw the line between them.

7. **E. canonicus** n. sp.—Form of *nitidus*, but slightly less longitudinally convex. Color dark castaneous, surface polished and glabrous. Head not carinate, punctuation close and moderately coarse. Pronotum densely punctate at sides, the punctures becoming somewhat finer and noticeably sparser toward the middle, where they are separated by about their own diameters. Elytral punctures separated from one to two times their own diameters on the disk, a little closer laterally. Punctuation beneath not so close as in *nitidus*, with scarcely noticeable intermixture of finer punctures, but otherwise very similar to that species. Metasternal lobe fully as long as wide, the anterior margin as defined by the raised marginal line, feebly sinuate truncate. Length 3.2 mm.

Hab.—Santa Rosa, Lower California (Beyer).

This species is slightly larger than the largest specimen of *nitidus* before me, but is otherwise very much like in superficial appearance the more strongly punctured western representatives of that species. The non carinate vertex and unmodified fifth ventral segment, however, readily separate the present species from *nitidus*. The resemblance to *similis* is perhaps still greater but the form of the metasternal lobe and the shorter metasternum, referred to under *similis*, should separate them.

8. **E. similis** n. sp.

Very similar to *canonicus* in form, color and sculpture; and differing in no noteworthy respects so far as I can see, except the following: The metasternal lobe is obviously transverse, its anterior margin distinctly though not strongly emarginate in circular arc; the metasternum at side obviously longer than the combined length of the third and fourth ventral segments, while in *canonicus* it is not sensibly longer than these segments. Length 3.25–4 mm.

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Hab.—Texas (Brownsville). Two examples in the National Museum collection.

There is considerable difference observable throughout the genus in the relative lengths of the metasternum (at sides) and the third and fourth ventral segments. In *nitidus* the metasternum is distinctly longer than the combined length of these two segments, being in fact proportioned nearly as in *similis*. In *punctulatus* the disparity is still greater in the same direction, while in the very elongate *obsoletus* the metasternum is plainly shorter than the third and fourth segments.

9. **E. punctulatus** Lec.—Rather broadly oval, very convex, rufopiceous to black, highly polished and glabrous, punctuation exceedingly fine and sparse over the greater portion of the surface both above and beneath. The head and sides of prothorax are as usual more closely punctured, though still unusually finely so; the posterior coxal plates are quite coarsely punctate and gradually very feebly widened externally. The metasternal lobe as defined by its marginal line is not at all emarginate. Length 2.4-3.8 mm.

This species occurs only in the extreme southern portions of our territory. It is known to me from Florida (Pensacola, Biscayne and Enterprise); Louisiana (type); Texas (Columbus and Brownsville); Lower California (Santa Rosa).

I have compared one of the types of *E. viticola* Schwarz with the LeConte type of *punctulatus* in the Ulke collection, and find them identical. Mr. Schwarz records taking his *viticola* in large numbers by beating dead vines of a species of *Vitis* at Enterprise, Florida, in June. This and *nitidus* are thus far the two commonest species in our fauna. Though confused in some collections they are easily separable, aside from the tabular differences, *punctulatus* being plainly stouter, more convex, much more finely punctate, and with the intermediate joints of the antennæ relatively larger and more unequal.

THECA Mulsant and Rey.

Body oval, moderately elongate, narrowed in front, convex. Head deeply sunk in the prothorax, not excavated beneath for the antennæ, which are received in the prothoracic excavation. Front not acutely margined over the antennal foveæ, but with oblique impressed lines joining a median transverse impression before which is a narrow flat clypeus. Antennæ 11-jointed, first joint auriculate, second slender, oblong; third to sixth small, seventh and eighth acutely prolonged inward, the latter nearly as wide as the ninth;

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ninth and tenth large, triangular; eleventh somewhat longer, oval. Last joint of palpi a little elongate, gradually dilated and obliquely truncate. Prothorax subconical, base subequal in width to the elytra, disk evenly convex. Elytra with narrow deeply impressed finely punctate striæ. Prosternum not visible, except on dissection, short, declivous; front coxæ contiguous, their apices expanded into a transversely elongate horizontal surface against which the mandibles abut in repose. Mesosternum with a posterior compressed and elevated process, its free edge horizontal, on a level with the metasternum and extending from between the middle coxæ to the anterior coxæ, the apical plates of which are on the same level. Middle coxæ rather narrowly separated, the legs received in deep excavations of the mesothorax and metathorax. Metasternum deeply channeled, declivous at sides in front, narrowly truncate at middle. Hind coxal plates very narrow and parallel. Ventral segments not very unequal, sutures nearly straight; first segment excavated for the reception of the hind legs, and finely longitudinally bicarinate at middle. Epipleuræ foveate for the hind knees. Legs slender, tarsi short, the first joint a little elongate.

1. **T. profunda** Lec.—Elongate-oval, piceous, antennæ pale, legs and abdomen usually rufous; above with fine, moderately long, intermixed prostrate and erect grayish pubescence. Head sparsely not coarsely punctate. Prothorax strongly narrowed from base to apex, sides straight, finely margined, hind angles obtuse; surface densely coarsely punctate, except toward the middle at base. Elytra finely striate, striæ finely punctate, the intervals about three times as wide as the striæ and scarcely punctate. Beneath coarsely punctate, the metasternum closely, the abdomen more sparsely so. Length 2-2.5 mm.

A widely diffused species, but apparently nowhere common. The following localities are represented in the material studied: Pennsylvania, Maryland, West Virginia, Michigan (Marquette and Eagle Harbor), Oregon, California.

The single specimen from California is the type of *striatopunctata*. A careful comparison of this with the types of *profunda* from Pennsylvania and Lake Superior and with Oregon specimens convinces me that the differences mentioned by LeConte are only individual and not greater than may be observed in Eastern specimens. A single specimen from Texas in my own collection is perhaps distinct by its coarser elytral striæ and more closely coarsely punctate abdomen. I am unwilling to give it a name without seeing additional specimens.

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CATORAMA Guérin.

Body convex, varying from broadly to narrowly oval, clothed above and beneath with short appressed pubescence of varying density. Head rather large, front evenly convex, clypeus depressed, bounded behind by a feebly impressed arcuate suture; a fine oblique raised line over the base of the antennæ; beneath only moderately impressed for the reception of the antennæ. Eyes moderate in size, not very convex, frequently more or less compressed laterally. Terminal joint of both maxillary and labial palpi triangular, the outer edge a little oblique and sometimes sinuate, rarely quite strongly emarginate, inner apical angle somewhat rounded. Antennæ 10-jointed; first joint large, second much smaller, obconical; third to seventh very small, the third longer than wide, the others about as wide as long; fourth and sixth just visibly more prominent internally and with the second, furnished beneath with a pair of longer setæ; eighth large, triangular or quadrate-triangular, as long as the six preceding united; ninth similar to but slightly smaller than the eighth; tenth longer, oval; the last three together longer than all the preceding. Prothorax evenly convex; moderately strongly arcuate anteriorly at middle, sinuate each side, the front angles acute; hind angles broadly rounded. Elytra irregularly punctate, usually with two marginal striæ extending from the middle to the apex, one or both of which, however, may be wanting. Front coxæ depressed, oblique, contiguous. Mesosternum nearly vertical posteriorly, its central portion becoming horizontal and narrowly channeled in front. Middle coxæ rather narrowly separated, the short metasternal process produced into a stout acuminate posteriorly curved hook, which is clasped by the mandibles in repose. Metasternum strongly abruptly declivous at sides, the declivity hollowed out somewhat for the reception of the middle feet. Hind coxal plates gradually very feebly wider externally. Front tibiæ compressed and more or less sulcate on the outer face; tarsi short and stout, first joint as long as the two or three following, joints 2–4 short, emarginate, fifth joint a little longer, broadly dilated. First ventral segment excavated for reception of hind feet and nearly concealed by them except at middle; segments 2–4 decreasing a little in length, the fifth longer; sutures nearly straight except the first.

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I have not seen Guérin's description of this genus, but that of Lacordaire, while it succeeds in missing nearly all the characters that are of any use for comparative purposes, does state explicitly that the antennæ are 10-jointed, and it is therefore difficult to understand why LeConte, should have applied the name to a species with 11-jointed antennæ. In *C. tabaci*, the type of the genus, the elytra are devoid of the submarginal striæ, which are so frequently present in the species of the genus, and the presence of these striæ in all the species then known to LeConte, except the one (*simplex*), which he refers to *Catorama*, is doubtless largely responsible for the erection of his genus *Hemiptychus*. This probability is further strengthed by the fact that of the species described in later years, all having submarginal striæ were placed in *Hemiptychus*, while those in which the striæ were wanting were referred to *Catorama*, without regard to the number of antennal joints. I have not been able to obtain an example of *C. tabaci*, but a specimen of the doubtless congeneric *palmarum* Chev. has been sent me by M. Pic and confirms the opinion previously entertained that *Hemiptychus* is synonymous with *Catorama*. Species of this genus may always be at once recognized by the peculiar intercoxal hook, an absolutely unique structure, and may further be distinguished from all near allies by the 10-jointed antennæ.

A careful study of much of the material which has for years been accumulating in most of the larger collections in this country shows that the genus is widely dispersed throughout the warmer portions of the temperate and the tropical regions of America, and that the number of species in our own fauna is surprisingly great. The species are almost completely unnameable with existing literature, and few collectors have ventured to do more than write "*Hemiptychus* sp." under their specimens. A complete solution of the problems of relationship even within our own faunal limits is bound to prove immensely difficult; indeed the labor already expended in working over the thousand or more specimens at hand has been very great, months having been given almost exclusively to the study of this one genus. The results are of course not final, but it is hoped that they will prove of real value to the future student. In attempting to subdivide our numerous species into groups, the presence or absence of the submarginal elytral striæ is naturally the first point of departure. Following this, the striation or sulcation of the outer

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or exposed face of the front and middle tibiæ, and the manner of punctuation of the metasternum have proved of the highest service in breaking up what would otherwise have still remained an unwieldy complex. In the large majority of species the front tibiæ are bistriate externally, the grooves being usually marginal, but occasionally more approximate. In a few species one or the other of these grooves may become greatly reduced or entirely lost. In about half of our species the middle tibiæ are striate or sulcate externally along their posterior margin. The punctuation of the metasternum is, like that of the upper surface, more or less obviously dual in nature, consisting of smaller and larger punctures intermixed. In the disposition of the larger punctures, and these may be the only ones visible without a strong glass, we have a very useful character; these being sometimes confined to the middle of the metasternum, sometimes denser at middle, but extending sparsely to the side margin, or again they may be nearly uniformly scattered over the whole surface. These characters are probably subject to some individual variation, but I have thus far found them remarkably constant. Additional characters useful in specific separation are not very numerous and consist chiefly in the bodily form which varies from rather strongly elongate (*carinatum*, *longulum*) to broadly oval (*palliatum*, *latum*); the outline in profile, which may be perfectly symmetrical (*validum*, *indistinctum*) or distinctly gibbous or more strongly arched anteriorly (*abbreviatum*, *gibbulum*); the vestiture so dense as to completely conceal the surface (*palliatum*), or so sparse as to be scarcely detectable (*castaneum*, *politum*), with every intermediate degree. The eighth antennal joint exhibits a moderate amount of variation, from the elongate triangular form in *uniforme* and *luteotectum* to distinctly transverse in *gracile* and *castaneum*. The relative size and abundance of the intermixed coarser punctures of the upper surface is of considerable specific importance, but is subject to individual variation. External sexual marks are virtually lacking. In a few species there is an evident difference in the size of the eyes, and in one (*castaneum*) the eighth joint of the antennæ is of different form in the two sexes. In a small number of species (*metasternale*, *carinatum* and *punctatum*), all of elongate form, the metasternum is acutely longitudinally carinate at middle In *punctulatum* the terminal joints of both labial and maxillary palpi are deeply emarginate at apex, after the man

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ner of *Petalium*. The same structure is obvious though much less marked in *debile*.

Very little is known as yet concerning the life habits of the species of this genus. Certain species are known to inhabit galls, while others have been found in the seeds or stems of various plants. The following biological notes have for the most part been furnished by the Department of Agriculture and include all that I have been able to learn in this connection.

C. impressifrons.—One example from Department of Agriculture is labeled "Willis, Texas, July 28, in seed of tobacco."

C. grande.—"Shovel Mountain, Texas. In stems of Yucca."

C. conophilum.—"Las Vegas, New Mexico, December 5, in cone of *Pinus edulis*" (Barber and Schwarz).

C. tumidum.—One example, probably of this species though not quite typical, was obtained from twigs of fig at Round Mountain, Texas (Schaupp).

C. uniforme.—"Mesilla Park, New Mexico, March 14, in pith of dead sunflower stem" (Cockerell).

C. confusum.—Specimens in National Museum were bred "from Cecidomyid galls on Celtis at Corpus Christi, Texas. Another example is labeled "Baton Rouge, Louisiana; bred from gall on Hickory." Others were "bred from Dryophanta (?) galls on Quercus sp. Rockport, Texas (Schwarz)."

C. indistinctum.—Two examples without locality, "bred from Cecidomyid galls on Pinus balsamæ."

C. sp. dub.—One example of a species near *pingue*, but perhaps distinct, bred from Cecidomyid gall on Juniper, Los Angeles, California (Coquillet).

The tabulation of the species of this genus is a most difficult matter, and I foresee that the scheme which follows will, beyond a certain point, frequently he found inadequate or ambiguous by the student, especially if he attempt without experience or a fair series of correctly named species, to identify uniques. The task is indeed quite hopeless, unless the specimens are clean and mounted in such fashion as to clearly reveal the few essential characters upon which their classification depends. The descriptions of the species following the table will be found very short. It is believed that added details would only obscure the essential differences, and thus impair rather than increase their usefulness.

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Elytra without distinctly impressed lateral striæ.....2.
Elytra with two lateral striæ extending from near the middle to the apex, the inner one rarely (*mancum* and *gracile*) feeble or subobsolete.....3.
2. Both front and middle tibiæ without grooves on the outer face.
Terminal palpal joints emarginate at apex .....1. **punctulatum.**
Terminal palpal joints not emarginate at apex .....2. **vitiosum.**
Front tibiæ bisulcate, middle tibiæ not sulcate.
Metasternum punctate at middle only, front with two coarsely punctate shallow impressions.....3. **impressifrons.**
Metasternum punctate throughout.
Head coarsely punctate, the punctures nearly or quite as large as those at the sides of the pronotum, punctures of elytra tending to arrange themselves in longitudinal bands, especially laterally...4. **sectans.**
Head with intermixed coarser punctures, which are, however, distinctly finer than those at the sides of the pronotum, punctures of elytra more uniformly distributed .....5. **montans.**
Front tibiæ bisulcate, middle tibiæ sulcate more or less plainly along the posterior margin.
Metasternum nearly or quite impunctate at sides, head virtually devoid of coarser punctures.
Coarser punctures very inconspicuous on the elytra and nearly lacking on the pronotum .....6. **estriatum.**
Coarser punctures moderately numerous at sides of pronotum and on the elytra.
Larger (3.8–4.8 mm.), pubescence shorter, coarser punctures less marked. 7. **grande.**
Smaller (3–3.5 mm.), pubescence longer, coarser punctuation more conspicuous, the punctures of the metasternum more nearly approaching the sides .....8. **lentum.**
Metasternum punctate, nearly evenly from side to side
Coarser punctures numerous and conspicuous on head, thorax and elytra. 9. **conophilum.**
Coarser punctures lacking on head and thorax, very sparse and fine on the elytra, not distinguishable unless denuded of pubescence, body more broadly oval.....10. **latum.**
3. Anterior tibiæ bisulcate externally.....7.
Anterior tibiæ with only a single well defined groove on the outer face.....4.
Anterior tibiæ not distinctly grooved, the posterior sulcus only faintly indicated; middle tibiæ not grooved; metasternum with few sparse punctures externally, profile not gibbous.....11. **simplex.**
4. Middle tibiæ grooved along the posterior margin.....6.
Middle tibiæ without marginal groove .....5.
5. Metasternum strongly longitudinally carinate at middle. 12. **metasternale.**
Metasternum not carinate.
Anterior sulcus of front tibiæ entirely lacking; posterior sulcus strong, rather widely distant from the margin, nearly as long as the tibia; intermixed coarser punctures of pronotum and elytra strong and numerous. .....13. **inæquale.**

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Anterior sulcus either lacking or fine and faintly impressed along the extreme margin of the distal dilation; posterior sulcus marginal, abbreviated apically; form rather strongly gibbous in profile; coarser punctures relatively sparse and fine on the elytra and still less evident on the pronotum ....14. **abbreviatum.**

Posterior sulcus lacking, anterior groove fine and close to the margin. 15. **gibbulum.**

6. Metasternum carinate .....16. **carinatum.**
   Metasternum not carinate ... .17. **ventrale.**
7. Middle tibiæ with an evident marginal groove.....8.
   Middle tibiæ without marginal groove .....23.
8. Metasternum carinate, form strongly elongate..... ..18. **punctatum.**
   Metasternum not carinate..... .....9.
9. Punctuation of elytra obviously dual, the surface finely punctulate with coarser punctures intermixed .....10.

   Punctuation of upper surface fine and close throughout, the coarser punctures scarcely evident at any part except toward the elytral apex in *densum*.

   Size larger, form more robust and less obtusely rounded at the extremities, surface dull, coarser punctures distinct on the apical third or fourth of the elytra, color uniformly dark brown.....19. **densum.**

   Size generally smaller, form more elongate, more obtusely rounded at extremities, surface shining, coarser punctuation practically absent throughout; elytra piceous, head, prothorax and under surface rufous. 20. **dichroum.**

   Punctuation distinctly coarser than in *densum* and *dichroum*, the punctures of the disk nearly uniform in size, but obviously larger at the sides of the pronotum and near the elytral apex; color and form as in *dichroum*, surface distinctly less shining.....21. **nigripenne.**

   Punctuation of pronotum fine and moderately close, a little coarser at sides; that of elytra sparse and coarse, not intermixed with finer punctures; black, head and prothorax slightly rufescent; size very small (1.5 mm.) .....22. **dispar.**
10. Color black or nearly so, punctuation relatively sparse, surface shining. 23. **nigritulum.**

    Color rufous to piceous, usually some shade of brown, punctuation closer, surface less shining ..... 11.
11. Pubescence longer and denser, obscuring or quite concealing the surface sculpture .....12.

    Pubescence finer and sparser, rarely (*robustum*) materially obscuring the surface sculpture.....13.
12. Size larger (3 mm.), form more oblong, nearly twice as long as wide, scarcely gibbous in profile ... .24. **vestitum.**

    Size smaller (2 mm.), more rotundate, but little more than one-half longer than wide, distinctly gibbous in profile .. ..25. **palliatum.**
13. Coarser punctures of metasternum more evenly distributed, always present at sides .....14.

    Coarser punctures of metasternum nearly confined to the central portion, scarcely evident at sides.

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Size larger (3 mm. or more), eighth joint of antennæ evidently longer than wide, terminal joints of both labial and maxillary palpi not distinctly sinuate at tip.....26. **placidum.**

Size smaller (less than 2 mm.), eighth joint of antennæ nearly or quite as wide as long, terminal joints of palpi conspicuously sinuate at tip. 27. **debile.**

14. Elytra evidently a little narrowed from the humeri.....15.
Elytra parallel.....17.
15. Size small (1.75 mm.), coarser punctures fine and inconspicuous; elytra rufescent in apical two-fifths.....28. **posticum.**
Size larger (usually from 2.5-3.5 mm.), elytra not evidently paler apically..16.
16. Form more gibbous in profile, coarser punctures of pronotum numerous and conspicuous; groove of middle tibia rather remote from the margin. (Texas).....29. **tumidum.**
Form less gibbous in profile, coarser punctures of pronotum inconspicuous, groove of middle tibia strictly marginal (California)...30. **nubilum.**
17. Metasternum at side nearly equal in length to the first two (visible) ventral segments.....31. **longulum.**
Metasternum at side distinctly shorter than the first two ventrals, usually about one half longer than the first segment.....18.
18. First joint of antennal club unusually narrow, slightly more than twice as long as wide; coarser punctures very fine and inconspicuous throughout; size larger (4 mm.).....32. **uniforme.**
First joint of antennal club distinctly less than twice as long as wide....19.
19. Head vaguely longitudinally carinate.....33. **fastigiatum.**
Head without trace of median carina.....20.
20. Form more elongate, pubescence finer and shorter.....21.
Form more oval, pubescence more conspicuous.....22.
21. Profile slightly gibbous.
Size larger (2.4-2.7 mm.), form less robust; grooves of front tibiæ parallel and mutually scarcely more distant than from the margins. (Lower California).....34. **otiosum.**
Size smaller (1.6-2.1 mm.), form more robust; grooves of front tibiæ more widely separated. (Brownsville, Texas).....35. **congruum.**
Profile not in the least gibbous, the arch flat and symmetrical; grooves of front tibiæ more widely separated.....36. **vexatum.**
22. Size large, about 4 mm. (southwestern Texas).....37. **robustum.**
Size moderate, 2-3.5 mm., coarser punctures of metasternum rather fine and sparse (Massachusetts to Louisiana).....38. **grave.**
Size smaller, coarser punctures of metasternum strong and numerous. (Florida and Texas).....39. **porosum.**
Size smaller, body more convex, coarser punctures of metasternum very fine and sparse. (Lower California).....40. **convexum.**
23. Pubescence exceedingly short, sparse and indistinct.....24.
Pubescence normally developed.....25.
24. Metasternum subequal in length to the second and third ventral segments united; punctuation dual, though rather feebly so in typical specimens, but varying in both directions; color castaneous (typical) to blackish.....41. **castaneum.**

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Metasternum distinctly shorter than the second and third ventrals united; punctuation simple, color castaneous .....42. **politum.**

25. Form evidently gibbous in profile, or elytra narrowing posteriorly from the humeri or both .....26.

Form not distinctly gibbous in profile, elytra parallel.....31.

26. Intermixed coarser punctures at sides of pronotum either nearly lacking or relatively small and inconspicuous; coarser punctures of metasternum nearly evenly distributed, not much more numerous at middle than at sides.....27.

Coarser punctures of pronotum strong and conspicuous.....28.

27. Size much smaller (1.4–2 mm.). Texas.....43. **triviale.**

Size larger (2.3–3 mm.).

More elongate, coarser punctures of elytra distinct. (California). 44. **conjunctum.**

Less elongate, coarser punctures scarcely detectable at any part. (Lake Superior).....45. **boreale.**

28. Form short and stout, pubescence relatively dense .....46 **pusillum.**

Form more elongate, pubescence sparser.....29.

29. Hind coxal plates and sides of metasternum nearly or quite impunctate..30.

Hind coxal plates punctate, metasternal punctures nearly as numerous at sides as at middle.

Less elongate, fine punctulation of metasternum nearly absent. (Arizona, New Mexico).....47. **consobrinum.**

More elongate, fine punctulation of metasternum quite distinct. (Florida). 48. **simile.**

30. Coarser punctures of pronotum and elytra only moderate in size and number, form robust, elytra evidently narrowed from the humeri. (Arizona) .....49. **pingue.**

Coarser punctures moderately strong, form rather strongly gibbous in profile, but less robust and nearly parallel. (Arizona, Texas). 50. **vacuum.**

Coarser punctures unusually strong and numerous, elytra not at all narrowed from the humeri. (Florida) .....51. **cicatricosum.**

31. Densely pubescent, surface sculpture nearly invisible..52. **luteotectum.**

Moderately pubescent, surface sculpture evident.....32.

32. Coarser punctures of elytra arranged in geminate series. 53. **geminatum.**

Coarser punctures of elytra irregularly placed, at least without distinct indication of double lines.....33.

33. Lateral striæ of elytra well developed .....35.

Inner lateral stria feeble or indistinct.....34.

34. Size smaller (under 2 mm.) and more elongate, coarser punctures virtually lacking, even on the metasternum, first joint of antennal club strongly transverse and triangular. (Ohio) .....54. **gracile.**

Larger and stouter, coarser punctures evident, first joint of antennal club a little longer than wide. (California).....55. **mancum.**

35. Size large (3.4–4 mm.), coarser punctures of metasternum few and very fine, color pale brown .....56. **validum.**

Size medium (2–2.7 mm.), coarser punctures of metasternum moderate in size and number, color blackish brown.

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Metasternum nearly or quite impunctate at sides ..... 57. **confusum.**
Metasternum punctured nearly evenly from side to side.
58. **angustum.**

Size smaller on the average, though examples of *auctum* sometimes slightly exceed 2 mm ..... 36.

36. Outline strongly convex in profile, coarser punctures relatively much less conspicuous, those of the pronotum confined to the marginal region. (California)..... 40.
Outline more flattened in profile, coarser punctures much stronger and more numerous, those of the pronotum extending well onto the disk (except in *parvum*) ..... 37.
37. Form more elongate, coarser punctuation fine and indistinct, color red brown, size small (1.75 mm.)..... 59. **parvum.**
Form stouter, coarser punctuation moderately strong ..... 38.
38. Size very small (1.5 mm.), coarser punctures large and numerous.
60. **turbidum.**
Size usually much larger, coarser punctuation moderate..... 39.
39. Metasternum more closely punctate at middle, evidently but very sparsely at sides..... 61. **auctum.**
Metasternum punctate at middle, the punctures completely disappearing at sides..... 62. **indistinctum.**
40. Brown, head sometimes a little paler, elytra parallel, lateral striæ quite deeply and sharply impressed..... 63. **exiguum.**
Piceous black, head and thorax reddish, elytra feebly widening to the middle, lateral striæ less pronounced ..... 64. **obsoletum.**

1. **C. punctulatum** Lec.—Blackish brown, three-fifths as wide as long, very convex, a little more pointed behind, distinctly gibbous in profile. Pubescence sparse and fine; coarser punctures lacking or indistinct on the head and pronotum, sparse but distinct throughout the elytra; no lateral striæ. Metasternum subequal in length to the second ventral segment, coarsely punctured throughout. Tibiæ not grooved. Eighth antennal joint slightly longer than wide, quadrate triangular. Terminal joint of both maxillary and labial palpi deeply emarginate or notched at apex. Length 1.8–2.4 mm.

Hab.—Probably confined to the coast line of tropical Florida. Specimens before me collected by Hubbard and Schwarz, and Wickham bear labels Biscayne, Lake Worth, Jupiter, Capron, St. Lucia, Key West and Dry Tortugas. The LeConte type is from Tampa.

The very convex form, short metasternum (apterous ?), deeply emarginate terminal joints of palpi and non sulcate tibiæ constitute a combination of characters which make this an easily recognized species. Dr. Horn (Coleoptera of Baja California) has united this species with *sectans*. The error is evidently due to a wrong determination of a series of Texas specimens of *sectans* in the Horn collection, these bearing the label *punctulatum* in LeConte's handwrit-

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ing. The Horn collection contains examples of the true *punctulatum* but evidently unrecognized, as they bear no name label.

2. **C. vitiosum** n. sp.—Brown, moderately elongate-oval, strongly convex; pubescence fine, not dense; form somewhat gibbous in profile and just visibly narrowed posteriorly from the humeri. Coarser punctures fine and inconspicuous on the head, numerous but not large at the sides of the pronotum, moderate in size and number on the elytra, the latter without lateral striæ. Metasternum punctured from side to side. Eighth joint of antennæ about two-fifths longer than wide. Terminal joint of palpi elongate-parallel, the apex pointed but not emarginate. Length 1.7-2 mm.

Texas, San Diego and Brownsville.

One example from the former locality sent by Mr. Chittenden and one from the latter by Mr. Schaeffer.

The entire absence of tibial grooves distinguishes this species from all others known to me, except *punctulatum*, from which it differs in the rather less robust form which is distinctly less gibbous in profile, and its more slender terminal palpal joints, which are moreover not at all notched or emarginate at apex.

3. **C. impressifrons** n. sp.—Dark brown, robust, three-fifths as wide as long, a little narrowed posteriorly, evidently gibbous in profile. Pubescence short, not dense. Head with two coarsely punctured shallow foveæ near the eyes. Prothorax moderately coarsely punctate laterally; the coarser punctures of the elytra beginning at basal fourth or fifth, increasing somewhat in size and number toward the apex, and showing a tendency to strial arrangement at sides. Metasternum punctured at middle. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 4.1-4.25 mm.

Hab.—Brownsville, Texas. Two examples collected by Mr. O. Dietz and sent me by Mr. Schaeffer.

The antennæ and palpi are not visible in either of the two examples. One of largest species and readily distinguished from all others by the peculiarly sculptured front. Since writing the above I have seen a third specimen in the National Museum collection labeled "Willis, Texas. In seed of tobacco; issued July 28"

4. **C. sectans** Lec.—Blackish fuscous, scarcely more than half as wide as long, evenly oblong, elliptical, not or scarcely gibbous in profile, very finely pubescent. Coarser punctuation strong and conspicuous throughout, the punctures as large and dense on the head as at the sides of the pronotum. There is a distinct tendency toward a serial arrangement on the elytra, the series more or less evidently approximated by pairs, especially toward the sides; lateral striæ lacking. Metasternum one-half longer than the second ventral segment, punctured nearly uniformly from side to side. Hind coxal plates strongly punctate. Eighth antennal joint triangular, about one-half longer than wide. Front tibiæ bisulcate, middle tibiæ not sulcate. Length 3-4 mm.

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Hab.—Texas, various localities. One specimen is labeled New York, possibly in error.

5. **C. mutans** * n. sp.—Dark brown, a little more than half as wide as long, evenly oblong, elliptical, scarcely gibbous in profile, pubescence moderate. Intermixed coarser punctures of the head moderately numerous, rather fine and evenly distributed, those of the pronotal sides distinctly coarser and denser; those of the elytra for the most part less coarse than at the sides of the pronotum, visible over the entire surface, but sparser and a little finer toward the base, with scarcely any tendency toward a serial arrangement at any part. Metasternum sparsely evenly punctate, the punctures about equal in size to those of the head. Hind coxal plates punctate. Eighth antennal joint triangular, one-half longer than wide. Front tibiæ bisulcate, middle tibiæ not sulcate. Length 2.4-3.7 mm.

Hab.—The typical form above described was taken at Oracle, Ft. Grant, and Santa Rita Mountains, Arizona, by Mr. Schwarz. A series from the Cape Region of Lower California (collections of Fuchs and Beyer) is not appreciably different. Specimens from Texas (San Diego, Brownsville, Hockley, Shovel Mt., "S. W. Texas") are more coarsely closely punctured, the punctures of the head but little finer than those of the pronotal sides. They thus approach *sectans*, but the color, longer and more conspicuous pubescence, and lack of distinct serial arrangement of punctures of the elytra are all as in the present species.

6. **C. estriatum** Horn.—Dark brown, robust, fully three-fifths as wide as long, broadly evenly oblong-elliptical, not at all gibbous in profile; pubescence very fine and short. Coarser punctures almost entirely lacking on head and pronotum, very fine but traceable on the elytra, where they tend to arrange themselves laterally in longitudinal bands as in *grande*. Lateral striæ lacking. Metasternum sparsely finely punctate at middle, smooth at sides. Antennæ and tibiæ as in *grande*. Length 4.5 mm.

Hab.—Lower California (San Fernando).

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* *Dorcatoma micans* Boisd.—A Mexican example bearing this label, from Mr. Gorham, is near *mutans*, but differs in the coarser punctures of the head being nearly absent, and by the metasternum being nearly impunctate at sides.

C. palmarum Chev.—A specimen of this species from San Domingo sent me by M. Pic has the front tibiæ bisulcate, middle tibiæ without grooves, metasternum punctured at sides, elytra without lateral striæ. It is thus to be placed near *sectans* and *mutans*. It is, however, much larger and more robust than either, with the coarser punctures of the head and pronotum very inconspicuous, while those of the elytra are distinctly arranged in irregular double lines.

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7. **C. grande** n. sp.—Brown, almost twice as long as wide, oblong-elliptical, not gibbous in profile, finely pubescent. Intermixed coarser punctures virtually wanting on the head, moderately numerous though rather fine at the sides of the pronotum, distinctly larger and moderately numerous on the elytra where they tend to become condensed in longitudinal bands, especially laterally. In certain lights the sides of the elytra are seen to be vaguely subsulcate, the line of punctures occupying these feeble impressions. Lateral striæ lacking. Metasternum finely punctured at middle, scarcely at all so at sides. Eighth antennal joint nearly one-half longer than wide, triangular, with outer apical angle rounded, the apical edge oblique. Front tibiæ bisulcate, middle tibiæ sulcate. Length 3.8-4.8 mm.

Hab.—Marfa, Texas; Shovel Mountain, Texas, "from stems of Yucca," National Museum collection; Oracle, Bright Angel, Santa Rita Mountains and Williams, Arizona.

This species attains a greater size than any other of our fauna. It is rather closely related to *estriatum*, but may be distinguished by the greater development of the coarser punctures and its more elongate form.

8. **C. lentum** n. sp.—Closely related to *grande*, but seems distinct by its smaller size, a trifle less obtusely rounded at extremities; slightly better defined traces of lateral striæ; coarser punctures of elytra, less evidently arranged in geminate series, those of the metasternum approaching more closely the sides; the hind coxal plates more evidently punctate, the pubescence distinctly longer. Length 3-3.5 mm.

Hab.—Prescott, Arizona. Collections, Bowditch and Blanchard.

9. **C. conophilum** n. sp.—Dark brown, rather less than three-fifths as wide as long. Evenly broadly oblong-elliptical, not gibbous in profile. Coarser punctuation of upper surface strong and conspicuous throughout. Metasternum rather finely punctate, the punctures extending to the sides. Hind coxal plates distinctly punctate. Front tibiæ bisulcate, middle tibiæ sulcate. Length 3.6 mm.

Hab.—Las Vegas, New Mexico.

The example before me was collected December 5, 1901, in cone of *Pinus edulis* by Barber and Schwarz.

10. **C. latum** Horn.—Dark brown, broadly oval, strongly convex, scarcely gibbous in profile, finely but rather conspicuously pubescent. Coarser punctures almost entirely absent from head and thorax, very fine and sparse on the elytra where they are almost completely concealed by the pubescence. Lateral striæ lacking. Metasternum exceedingly sparsely finely punctured at the sides, the punctures but little closer toward the middle. Eighth antennal joint longer than wide, apical edge distinctly oblique. Front tibiæ bisulcate, middle sulcate. Length 2.5-3.8 mm.

Hab.—Rather plentiful on the sea beaches of southern Califor-

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nia. This species is apterous, the metasternum shorter than usual, but less so than in *punctulatum*, being about one third longer than the second ventral segment.

11. **C. simplex** n. sp.—Dark brown, form rather robust, less than twice as long as wide and quite strongly convex, scarcely visibly narrowed posteriorly, not gibbous in profile. Pubescence fine, feebly condensed in longitudinal vittæ on the elytra in well preserved specimens. Coarser punctures scarcely evident on the head, moderately developed at the sides of the pronotum, and rather strongly so on the elytra, especially toward the apex, where they are much coarser than on the pronotum. Metasternum sparsely, finely, nearly evenly punctate throughout. Hind coxal plates punctate. Front tibiæ rather strongly dilated apically, posterior groove faintly indicated, anterior groove lacking. Middle tibiæ not grooved. Length 2.5-3.2 mm.

Hab.—Florida (Punta Gorda, Key West, Biscayne—Hubbard and Schwarz collection).

The eighth antennal joint (first joint of club) is just visibly longer than wide, subquadrate, obliquely narrowed internally at base, the inner apical angle right. Lateral striæ of elytra sharply impressed, ending abruptly opposite the base of the first visible ventral segment, and not continued to base by shallow grooves or rows of larger punctures.

12. **C. metasternale** n. sp.—Dark brown, not robust, almost exactly twice as long as wide, scarcely visibly narrowed posteriorly, distinctly gibbous in profile. Pubescence fine and sparse. Punctuation of head obviously dual, the coarser punctures, however, are fine, numerous and evenly distributed. Pronotum coarsely closely punctured at sides; coarser punctures of elytra rather fine and sparse throughout, distinctly finer than those at the sides of the pronotum, except near the side margin anteriorly. Metasternum strongly longitudinally carinated at middle, sparsely finely punctate, the punctures very fine and widely spaced laterally, but evidently extending to the sides. Hind coxal plates punctate. Front tibiæ with a single groove rather widely distant from the posterior margin; middle tibiæ not grooved. Length 2.7 mm.

Hab.—Santa Rosa, Lower California.

Aside from the difference in tibial grooves, *metasternale* may be separated from the other species with carinate metasternum—*punctatum* and *carinatum*—by its plainly gibbous profile. It inhabits a completely distinct faunal region.

13. **C. inæquale** n. sp.—Dark piceous brown, a little less than twice as long as wide, slightly narrowed posteriorly, rather strongly gibbous in profile. Pubescence fine and short. Intermixed coarser punctures conspicuous throughout, being numerous and quite evenly disposed on the head, coarse and close at the sides of the pronotum, and extending well into the disk, becoming smaller

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inwardly as usual; strong and numerous on the elytra, a little finer in the sutural region, especially toward the base. Metasternum very sparsely but nearly evenly punctured from side to side. Eighth antennal joint broadly triangular, a little longer than wide, the inner apical angle slightly obtuse and somewhat rounded. Front tibiæ with a single nearly median groove, middle tibiæ not grooved. Length 2.2-3.2 mm.

Hab.—Texas (Laredo, May 27th, Hubbard and Schwarz); Brownsville (Wickham, Dury and Barber).

A single example from Arizona in the National Museum collection is referred here doubtfully. It is 2.5 mm. in length, red-brown, with the coarser punctures less strong than in typical specimens. The more essential characters are, however, practically identical and it is assumed for the present to represent only a geographical race.

14. **C. abbreviatum** Lec.—Dark piceous brown, varying to reddish, rather stout, a little more than three-fifths as wide as long, distinctly narrowed from the humeri and strongly gibbous in profile. Pubescence fine and sparse. Finely punctulate, the intermixed coarser punctures practically absent on the head, few and small near side margins of the pronotum, sparse and inconspicuous on the elytra in the type, but larger and more numerous toward the elytral apex in some specimens doubtless correctly associated. Metasternum with moderate punctures very sparsely scattered laterally but more numerous at middle. Eighth antennal joint a trifle longer than wide, subquadrate, the basal edge oblique. Front tibiæ with posterior groove well marked but abbreviated at about the apical third. There are feeble traces of the anterior groove toward the apex in the type, but these may either entirely disappear or become fairly well developed. Middle tibiæ not grooved. Length 2-2.4 mm.

Hab.—Florida (Capron, type, Miami, Lake Worth, Key Largo). Collections of Hubbard and Schwarz, and Beyer.

The present species represents the extreme development of gibbosity in profile. It is also peculiar in the variability of the anterior tibial groove, usually so constant in character. The lateral striæ are shorter than usual, extending forward to a point opposite the first visible ventral suture.

C. seminulum Gorh. from Guatemala is closely allied, but has the groove of front tibiæ remote from hind margin, and the lateral striæ of the elytra longer.

15. **C. gibbulum** n. sp.—Dark brown, about three-fifths as wide as long, distinctly narrowed and somewhat pointed behind, strongly gibbous in profile. Pubescence yellowish gray, plentiful, obscuring to some extent the surface sculpture. Surface rather less shining than usual, coarser punctures visible though sparse toward the elytral apex, indistinct anteriorly and practically absent on the head and pronotum, except at the extreme lateral margins of the latter.

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Metasternum sparsely nearly uniformly punctured from side to side. Eighth antennal joint triangular and nearly one-half longer than wide. Front tibiæ unisulcate, the posterior groove lacking or extremely indistinctly indicated, the anterior groove fine and close to the margin. Middle tibiæ not grooved. Length 1.8–2.5 mm.

Hab.—Arizona, Tucson and Hot Springs, June; Catalina Springs, July (Hubbard and Schwarz collection); "Arizona" (Morrison); Pinal Mountains (Wickham); Nevada (Reno, Wickham); California (Palm Springs). One specimen collected at Winslow, Arizona, by Wickham is also referred here, though not true to type.

16. **C. carinatum** n. sp.—Brown, form elongate, parallel, a little less than half as wide as long, not in the least gibbous in profile, pubescence very fine and thin. Coarser punctures evident on the head, distinct at the sides of pronotum, rather numerous but not very conspicuous on the elytra. Metasternum strongly carinate, punctures sparse throughout, but finer and more remote laterally. Eighth antennal joint quadrate-triangular, very little longer than wide. Front tibiæ rather strongly dilated apically, the anterior sulcus lacking; middle tibiæ feebly grooved close to the hind margin. Length 2 mm.

Hab.—Crescent City, Florida. Hubbard and Schwarz collection.

Described from a single specimen, probably a male, as the eyes are unusually large, being separated by only about two and one-half times their horizontal diameter as seen from the front. Quite similar in appearance to *ventrale*, but the latter is a little less elongate, with slightly longer pubescence and non-carinate metasternum.

17. **C. ventrale** Lec.—Color varying from red brown to piceous brown, ventral surface paler. Form parallel, twice as long as wide, not at all gibbous in profile, pubescence fine, rather sparse. Coarser punctures inconspicuous or nearly absent on the head and thorax, very fine and sparse on the elytra. Metasternum sparsely punctate from side to side, the punctures a little larger and less remote at middle. Eighth antennal joint quadrate-triangular. Front tibiæ with posterior groove. Middle tibiæ finely grooved close to the posterior margin. Length 2–2.4 mm.

Hab.—Columbus, Texas, May; New Iberia, Louisiana, June. (Collection Hubbard and Schwarz). LeConte's type was from Illinois.

18. **C. punctatum** Lec.—Brown, cylindrical, twice as long as wide, not at all gibbous in profile. Pubescence moderate; coarser punctuation always distinct, but variable. Metasternum strongly carinate, punctate throughout. Eighth antennal joint quadrate-triangular, scarcely longer than wide. Front tibiæ deeply bisulcate, middle tibiæ plainly sulcate. Length 2.1–2.8 mm.

LeConte's type is from Louisiana; he also mentions a second specimen from Georgia The material at hand includes specimens

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from Columbus, Texas, Hubbard and Schwarz collection; Covington, Louisiana, H. Soltau collection; Enterprise and Miami, Florida, collection of Hubbard and Schwarz, and Beyer; Cincinnati, Ohio, Dury.

In the type the coarser punctures are conspicuous though not very large. In the Florida examples these punctures become very coarse and numerous, while in some of the Cincinnati ones they may almost be called indistinct. There is present, however, every degree between the extremes and I cannot discover any structural peculiarities which will serve for specific separation. Passing over this extraordinary variability of punctuation, the cylindrical form, carinate metasternum and tibial grooves form a combination of characters not duplicated elsewhere, and render the identification of this species at once easy and certain.

19. **C. densum** n. sp.—Dark brown, head and thorax dull rufous; moderately robust, slightly more than one-half as wide as long, oblong-oval, rather narrowly rounded at extremities, scarcely visibly gibbous in profile; pubescence very short and fine, but moderately plentiful. Punctulation fine and dense, surface minutely alutaceous and dull; coarser punctures invisible, except in the apical third or fourth of the elytra. Metasternum alutaceous, punctured sparsely throughout. Eighth antennal joint broadly triangular, scarcely as wide as long. Front tibiæ bisulcate, middle tibiæ finely but distinctly sulcate close to the posterior margin. Length 2.5 mm.

Hab.—Described from a single specimen taken at Washington, D. C. (Hubbard & Schwarz collection). Possibly a variety of *boreale*, but the latter certainly has non-sulcate middle tibiæ and LeConte says that there are no scattered punctures on the elytra.

20. **C. dichroum** n. sp.—Piceous brown, head, thorax and ventral surface rufous; form oblong-elliptical, twice as long as wide, not at all gibbous in profile; upper surface finely, evenly, rather closely punctulate throughout, coarser punctures virtually absent. Metasternum with dual punctuation, the coarser punctures reaching the sides. Eighth antennal joint broadly subquadrate-triangular, nearly as wide as long. Front tibiæ bisulcate, middle tibiæ finely sulcate close to the posterior margin. Length 1.8-2.5 mm.

Hab.—Michigan (Detroit); Virginia (Pennington Gap); West Virginia (Berkeley); Louisiana (New Iberia, Soltau).

21. **C. nigripenne** n. sp.—Head, thorax and lower surface rufous, elytra black; form elongate-oval, slightly more than half as wide as long, not gibbous in profile. Pubescence fine and sparse. Surface very finely alutaceous, the lustre somewhat dull; coarser punctures fine and not very obvious on the head, pronotum very finely punctulate on the disk, a little more coarsely so at the

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lateral margins; punctuation of the elytra about as strong as at the sides of the pronotum, and not very variable in size. Metasternum finely sparsely punctate throughout, the punctures a little stronger at the middle, surface alutaceous. Eighth antennal joint broadly triangular, nearly as wide as long. Front tibiæ bisulcate; middle tibiæ finely grooved along the hind margin. Length 1.75 mm.

Hab.—New Mexico (Deming), Hubbard and Schwarz collection.

22. **C. dispar** n. sp.—Black, head and lower surface rufescent. Form moderately robust, less than twice as long as wide, not narrowed posteriorly nor gibbous in profile. Pubescence very fine and thin, but evident on the head and pronotum, excessively sparse and short on the elytra. Head finely punctulate, without intermixed coarser punctures, pronotum finely punctulate on the disk, the punctures becoming distinctly coarser at the side margins; elytra coarsely sparsely punctate, the finer punctuation entirely lacking, the surface minutely reticulate but not dull. Metasternum sparsely, finely punctate from side to side. Eighth antennal joint quadrate-triangular. Front tibiæ bisulcate, middle tibiæ finely but rather deeply sulcate. Length 1.5 mm.

Hab.—Columbus, Texas. Hubbard and Schwarz collection. This is the smallest species in our fauna. It is somewhat similar to some examples of *nigritulum*, but in none of these is the fine punctuation of the elytra entirely lacking, and the pubescence is much better developed. In *dispar* the pubescence of the elytra is almost as nearly obsolete as in *castaneum* and *politum*, but these two species are at once separable by their non-sulcate middle tibiæ. Since writing the above I have seen another example of this species taken at Brownsville, Texas, by Mr. Barber.

23. **C. nigritulum** Lec.—Black, or piceous, form moderately robust, less than twice as long as wide, not narrowed behind and scarcely gibbous in profile. Pubescence sparse and very fine. Head and pronotum finely moderately closely evenly punctulate, without intermixed coarser punctures, the punctures slightly larger close to the side margins of the pronotum. Elytra finely numerously punctulate, with scattered somewhat larger punctures, which are, however, not very conspicuous. Metasternum finely sparsely punctate throughout. Eighth antennal joint broadly triangular. Front tibiæ bisulcate; middle tibiæ sulcate. Length 1.7-2.4 mm.

Hab.—Massachusetts (Tyngsboro, Blanchard); District of Columbia; Virginia (Roslyn); West Virginia (Berkeley); Ohio (Cincinnati, Dury); Michigan (Grand Ledge); Tennessee (Memphis, Soltau); Mississippi (Meridian); Indian Territory (Atoka, Wickham); Texas (Columbus).

The above description applies to typical specimens, but there is much variation in punctuation of the elytra within what I have assumed to be specific limits. The fine punctures may nearly dis-

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appear, leaving the surface sparsely moderately coarsely punctate and very shining, or on the other hand the coarser punctures may become quite inconspicuous, though always present. I have placed here several brown specimens which are possibly different, but at present seem too feebly characterized to separate under a distinct name.

24. **C. vestitum** n. sp.—Reddish brown or somewhat darker, color and sculpture nearly concealed by the rather dense yellowish gray pubescence. Form parallel, slightly less than three-fifths as wide as long, a little more obtusely rounded behind, scarcely gibbous in profile. Coarser punctuation well developed, slightly strongest at sides of pronotum. Metasternum punctate at middle, the punctures very sparse or quite absent at sides. Eighth antennal joint triangular, about twice as long as wide, the terminal edge oblique. Front tibiæ bisulcate; middle tibiæ sulcate. Length 2.8–3.5 mm.

Hab.—California (Pasadena, Riverside and Ft. Yuma); Arizona (Tucson); Lower California (San Jose del Cabo).

Most nearly resembles *luteotectum*, but this latter has nonsulcate middle tibiæ and still denser pubescence, which is more distinctly yellow in color. The coarser punctuation is much less developed and the front tibial grooves are strictly marginal and thus more widely separated than in *vestitum*.

25. **C. palliatum** Fall.—Rufocastaneous, surface entirely concealed by the very dense yellowish white pubescence. Form short and strongly convex, two-thirds as wide as long, quite strongly gibbous in profile. Coarser punctures sparse and fine. Metasternum finely very sparsely punctate from side to side. Eighth antennal joint triangular, one-half longer than wide, terminal edge oblique. Front tibiæ finely bisulcate; middle tibiæ with a fine marginal groove. Length 1.8–2 mm.

Hab.—California (Yuma and Needles, Wickham).

I have taken this species early in July at Yuma, where it occurred on a species of *Dalea*. It is the most broadly oval and most densely pubescent species in our fauna.

26. **C. placidum** n. sp.—Brown, moderately pubescent, very slightly more than half as wide as long, oblong-elliptical, not gibbous in profile. Coarser punctures moderately numerous but not large on the elytra, a little finer still on the pronotum and very inconspicuous though visible on the head. Metasternum finely sparsely punctate at middle, the punctures not extending to the sides. Eighth antennal joint one-half longer than wide, triangular. Front tibiæ bisulcate; middle tibiæ with a distinct marginal groove. Length 3–3.2 mm.

Hab.—Lower California (San Jose del Cabo).

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27. **C. debile** Lec.—Reddish brown, nearly three-fifths as wide as long, not evidently narrowed behind and not at all gibbous in profile. Pubescence moderate. Coarser punctures fine and inconspicuous throughout, a little more evident on the elytra. Metasternal punctures fine not or scarcely reaching the sides. Eighth antennal joint nearly or quite as wide as long, quadrately triangular. Front tibiæ bisulcate; middle tibiæ finely sulcate close to the posterior margin. Length 1.6–1.9 mm.

Hab.—Florida (Enterprise, St. Lucia, Biscayne, Miami, Key Largo, Elliott's Key). Numerous specimens, collections of Hubbard and Schwarz, and Beyer.

The apex of the terminal palpal joints is more deeply sinuate or notched than in any other species except *punctulatum*.

28. **C. posticum** n. sp.—Dark brown, elytra reddish in apical two-fifths. Form just visibly narrowed posteriorly, distinctly though not strongly gibbous in profile. Pubescence fine and sparse; coarser punctures evident but everywhere fine and inconspicuous. Metasternum sparsely finely punctate throughout. Eighth antennal joint broadly, subquadrately triangular, a little longer than wide. Front tibiæ bisulcate; middle tibiæ finely sulcate. Length 1.75 mm.; width 1 mm.

Hab.—Texas. Three examples taken by Mr. Schwarz at San Diego.

29. **C. tumidum** n. sp.—Dark brown or fuscous, slightly more than half as wide as long, a little narrowed posteriorly and rather strongly gibbous in profile. Pubescence fine and short. Coarser punctures rather numerous but fine and inconspicuous on the head, quite strong and close at the sides of the pronotum, nearly as large but sparser on the elytra. Metasternum sparsely, evenly, finely punctate from side to side. Eighth antennal joint about one-third longer than wide, triangular, with outer angle rounded and terminal edge moderately oblique. Front tibiæ bisulcate; sulcus of middle tibiæ nearer the middle than the margin. Length 2.5–3.7 mm.

Hab.—Texas (Fedor, San Diego, Cypress Mills); New Mexico.

One example from Laredo, Texas, in Hubbard and Schwarz collection is doubtfully placed here; the metasternum is more coarsely punctate, and the groove of middle tibiæ more nearly marginal.

30. **C. nubilum** n. sp.—Reddish brown varying to darker; elytral suture nearly always paler toward the apex, the elytra especially posteriorly usually feebly vittate, the sides of the pronotum often clouded with fuscous. Form slightly or scarcely narrowed behind, elytra elliptically rounded at apex, sides of prothorax straighter than usual, making the outline nearly hyperbolic in front, the thorax seemingly smaller than common; outline scarcely at all gibbous in profile. Pubescence fine and short. Coarser punctures lacking on the head, very fine and inconspicuous elsewhere. Metasternum finely punctate, the punc-

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tures closer at the middle, very sparse laterally but attaining the sides. Eighth antennal joint about two-fifths longer than wide, triangular, the apical edge oblique. Front tibiæ bisulcate; middle tibiæ with strictly marginal groove. Length 2.2-3.2 mm.

Hab.—California (Pomona, Pasadena, San Diego, San Bernardino County).

The elytral vittæ are at best feeble, but are visible with a fairly good glass, except in one or two of the very darkest specimens.

31. **C. longulum** n. sp.—Dark brown, one-half as wide as long, parallel, not at all gibbous in profile, pubescence fine and sparse. Coarser punctures scarcely visible on the head, present in moderate numbers at the sides of the pronotum and on the elytra, but small and inconspicuous. Metasternum finely punctured throughout, the punctures a little larger and closer at the middle, widely separated at the sides. Eighth antennal joint about one-third longer than wide, parallel for a short distance at apex, the apical angle nearly right. Front tibiæ bisulcate; middle tibiæ sulcate. Length 2-2.2 mm.

Hab.—Arizona. Described from four examples taken by Barber and Schwarz at Williams and Bright Angel. With these is included a nearly identical specimen taken by the same collectors at Las Vegas, New Mexico. The narrow form and elongate metasternum readily separate this species from the otherwise allied species.

32. **C. uniforme** n. sp.—Pale brown, oblong-elliptical, not gibbous in profile, pubescence moderate. Coarser punctuation obsolete on the head, visible but sparse, fine and inconspicuous at the sides of the pronotum and throughout the elytra. Metasternum finely sparsely punctate from side to side. Eighth antennal joint very nearly twice as long as wide, the terminal edge strongly oblique, the apical angle obtuse. Front tibiæ bisulcate; middle tibiæ finely sulcate along the posterior margin. Length 4 mm.

Hab.—New Mexico (Mesilla Park ?). One specimen bearing the following legend: "In garden, March 14, in pith of dead sunflower stem." The specimen was collected by Cockerell and sent to Mr. Wickham from whom I received it.

33. **C. fastigiatum** n. sp.—Brown, oblong-elliptical, a little more than half as wide as long, not gibbous in profile; pubescence fine, rather sparse. Coarser punctuation fine and indistinct on the head, fine but more distinct at the sides of the pronotum, moderate on the elytra, becoming close and strong toward the apex. Metasternum punctured finely from side to side, very sparsely laterally, more closely at middle. Head obtusely, vaguely, longitudinally carinate. Eighth antennal joint about one-third longer than wide, subparallel at apex. Front tibiæ bisulcate; middle tibiæ with a sharply defined marginal groove. Length 2.5-2.9 mm.

Hab.—Texas. Several examples in Hubbard and Schwarz col-

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lection taken at San Diego, others collected at Brownsville by Dury and Barber.

The cephalic carina is a character peculiar to the present species; it is indistinct in certain lights but plain enough in others.

34. **C. otiosum** n. sp.—Dark brown, apical third of elytra feebly rufescent. Form oblong-elliptical, very nearly twice as long as wide, a little gibbous in profile; pubescence fine and short. Coarser punctures distinct and moderately strong on elytra and sides of pronotum, finer but plainly visible over the entire front. Metasternum polished, the finer punctures excessively minute and sparse, the coarser ones nearly reaching the sides where, however, they are remote. Eighth antennal joint triangular, slightly longer than wide, the apical angle nearly right. Front tibiæ deeply bisulcate, the grooves separated by a distance only slightly greater than that of the posterior one from the margin. Middle tibiæ deeply sulcate. Length 2.4-2.7 mm.

Hab.—Lower California (Santa Rosa). Two examples collected by Mr. Beyer.

35. **C. congruum** n. sp.—Dark brown, moderately elongate, oval, parallel as viewed from above, slightly gibbous in profile; pubescence rather short and sparse, fulvo-cinereous. Coarser punctuation moderate in development on the elytra and at sides of pronotum, feeble on the head. Metasternum very sparsely nearly uniformly punctured from side to side. Eighth joint of antennæ slightly longer than wide, the inner edge rounded. Front tibiæ bisulcate, the grooves deep, complete and mutually more distant than from the margins; middle tibiæ with marginal groove. Length 1.6-2.1 mm.

Brownsville, Texas. Collected by Mr. Barber.

Rather closely allied to *otiosum* of Lower California, but smaller, a little stouter and with the grooves of the front tibiæ less approximate.

36. **C. vexatum** n. sp.—Brown, oblong-elliptical, twice as long as wide, not at all gibbous in profile; pubescence fine and rather sparse. Coarser punctures somewhat variable in development but usually moderate in size and not very prominent. Metasternum punctured from side to side. Eighth antennal joint slightly longer than wide, quadrate triangular. Front tibiæ bisulcate; middle tibiæ sulcate. Length 2.5-3.5 mm.

Hab.—New York; District of Columbia; Virginia; West Virginia; Ohio; Kentucky; Illinois; Kansas; Texas.

Single examples from Louisiana and Georgia are also included, though departing considerably from the typical form of the Middle Atlantic States. Two examples from Washington, D. C., are nearly black. In one of these the anterior groove of the front tibiæ is nearly obliterated, and in the other it is abbreviated. It is not

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possible to say whether this is more than an accidental variation. As might be expected in a species of so wide a range the variation in minor details—chiefly surface sculpture—is considerable; not so great, however, as in *nigritulum*, a species of almost identical range. The chief difficulty is to draw a line between this and *grave*, the varieties of the two species approaching one another in a puzzling way. The typical forms are easily separable; the present being distinctly more elongate in form, with sparser shorter pubescence, less flattened eyes and non-impressed front.

37. **C. robustum** Horn.—Brown, oblong-elliptical, evidently less than twice as long as wide, not or but feebly gibbous in profile. Pubescence short but moderately dense, yellowish gray. Coarser punctuation moderate, showing a tendency to a striate or vittate arrangement on the elytra, especially toward the sides. Metasternum punctured throughout, but very remotely at the sides. Eighth antennal joint triangular, a little longer than wide. Front tibiæ bisulcate; middle tibiæ sulcate. Length 3.5-4.5 mm.

Hab.—Southwestern Texas.

The larger measurement given above is on the authority of the original description; of the five examples before me the largest is only 4 mm. in length. The largest specimens of *grave* approach in size the smaller ones of *robustum*, but may be distinguished by their less dense relatively longer pubescence and flatter more strongly compressed eyes.

38. **C. grave** Lec.—Brown, form quite robust, oblong-elliptical, slightly less than three-fifths as wide as long, not distinctly gibbous in profile. Pubescence moderately plentiful, but not concealing the surface sculpture; coarser punctures distinct throughout, moderate in size. Metasternum punctured from side to side, the punctures finer and very sparse laterally. Eighth antennal joint triangular, a little longer than wide. Front tibiæ bisulcate; middle tibiæ sulcate. Length 2.2-3.7 mm.

Hab.—Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Alabama (Oak Grove); Tennessee (Memphis); Louisiana (Covington, Mandeville, Baton Rouge).

The eyes, at least in the female, are flatter and more strongly compressed than in any other species known to me. In nearly all specimens there is a somewhat vague impression of the front close to the anterior inner margin of the eyes. This impression, distinct enough in certain lights, may be easily overlooked. I have not noticed it in any specimen of *vexatum*, with which species *grave* is most likely to be confused. For further comparison of these two see remarks under *vexatum*.

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39. **C. porosum** n. sp.—Brown, elytra feebly rufescent toward the apex, very nearly three-fifths as wide as long, oblong-elliptical, slightly gibbous in profile, pubescence moderate. Head densely not very finely punctulate, with slightly larger intermixed punctures which are not very conspicuous. Pronotum moderately punctate at sides; coarser punctures of elytra strong and rather numerous, especially at the sides and apex. Metasternum very coarsely punctured throughout, the punctures as close and as large at sides as at the middle. Antennæ and legs as in *grave*. Length 2.2–2.5 mm.

Hab.—Florida (Capron, Crescent City and Tampa); Texas (Columbus and Victoria).

Closely resembles a small *grave*, from which it may be more readily distinguished by the very coarse punctures of the metasternum, which are not finer and more distant at sides. In the Texas example the coarser punctures of the head are large and conspicuous, and those of the pronotum and elytra more numerous and coarser still than in the typical form. It represents a well marked geographical race at least.

40. **C. convexum** n. sp.—Dark brown, pubescence short but moderately plentiful. Rather robust, oblong-elliptical, almost three-fifths as wide as long, strongly convex and very slightly gibbous in profile. Coarser punctures distinct, of nearly equal size and distribution throughout the elytra, moderate in size and number at sides of pronotum, few and not conspicuous on the head. Metasternum moderately punctate at middle, more finely and very sparsely at sides. Eighth antennal joint about one-third longer than wide, subparallel toward the apex, the angle nearly right. Front tibiæ bisulcate; middle tibiæ with a fine but distinctly impressed marginal groove. Length 2.2–2.6 mm.

Hab.—Lower California (Santa Rosa, Beyer); Arizona (one example in LeConte cabinet).

41. **C. castaneum** Hamilton.—Rufocastaneous varying to piceous. Pubescence of elytra excessively short and sparse, barely visible with a good triplet; hairs of head and pronotum very fine and sparse but longer and more evident. Form oblong-elliptical, distinctly more than half as wide as long, very feebly gibbous in profile. Upper surface highly polished throughout; head minutely punctulate; pronotum similarly finely sparsely punctulate at middle, the punctures gradually larger to side margins; elytra without finer punctuation (exception noted below), the coarser punctures of good size, sparsely evenly distributed on the disk, but showing a tendency toward a strial arrangement laterally, becoming confusedly serial in the shallow impressions or grooves, which continue the lateral striæ to the base. Metasternum very sparsely punctured at sides, more closely at middle. Eighth antennal joint triangular and fully as wide as long in the female, distinctly transverse and subquadrate in the male. Front tibiæ bisulcate; the posterior groove nearly complete; middle tibiæ not sulcate. Length 1.5–2.5 mm.

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Hab.—Massachusetts (Blanchard); Pennsylvania; Texas (Columbus and Goliad); Missouri; Florida (Tampa, Haulover).

In a series of specimens taken at Goliad, Texas, by Mr. Schwarz, the color varies from the typical castaneous to piceous and these darker examples show a distinctly dual punctuation of the elytra; other specimens in the same lot are, however, typical in this respect, and we are thus obliged to regard this as only an individual variation similar to that observed in *nigritulum*. Dr. Hamilton says of this species: "Next to *nigritulum* the most common of this genus near Allegheny and Pittsburg. On *Vaccinium* and other low bushes, June and July, not abundant."

42. **C. politum** n. sp.—Castaneous, inclining to rufous at the elytral apex. Very similar to *castaneum*, but differing as follows: The form is a little more elongate, less convex when viewed in profile, the elytra slightly narrowed from the humeri in most specimens. Lateral striæ of elytra not continued toward the base by shallow grooves, the punctures showing no tendency toward a serial arrangement. Metasternum at side one and one-half times the length of the second ventral segment (nearly or quite as long as the second and third united in *castaneum*), posterior groove of the front tibiæ obsolete in apical half. Length 1.5–1.9 mm.

Hab.—Florida (Biscayne, Key West, Punta Gorda, Tampa).

All specimens seen were collected by either Hubbard or Schwarz.

This species resembles *castaneum* closely and has thus far been confused with it. With a little care the two species should be separated with certainty.

43. **C. triviale** n. sp.—Brown, of varying shade, the elytral apex usually of brighter tint. Form slightly ovate, distinctly though not strongly gibbous in profile; pubescence moderate; coarser punctuation everywhere very fine and indistinct. Metasternum punctate throughout, but very sparsely and finely at sides. Eighth antennal joint triangular, about one-fourth longer than wide. Front tibiæ rather finely bisulcate; middle tibiæ not sulcate. Length 1.4–2 mm.

Hab.—Texas (Dimmit County; Beeville; San Diego; Brownsville; Uvalde; Del Rio; Big Spring). Arizona (one example collected by Morrison)

The form, small size and nearly invisible coarser punctuation make this species comparatively easy of recognition.

44. **C. conjunctum** n. sp.—Dark brown, slightly ovate, and a little gibbous in profile; pubescence short, cinereous and moderately dense; coarser punctuation fine and sparse on the elytra, very fine and indistinct on the prothorax, and practically absent on the head. Metasternum finely sparsely punctured throughout. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 2.8 mm.

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Hab.—California (Fresno). Described from a single example in the Hubbard and Schwarz collection. Closely related to *triviale*, but the much larger size and denser pubescence are quite sufficient to distinguish it.

45. **C. boreale** Lec.—Rather robust, a little gibbous in profile, moderately pubescent; upper surface finely densely punctulate without trace of coarser punctures on the head and pronotum, and with very few on the elytra, these being sparse and indistinct. Metasternum very sparsely but obviously punctate at sides. First joint of antennal club triangular, about twice as long as wide, the outer edge very oblique. Length 2.3–3 mm.

Hab.—Lake Superior (type); Michigan. (One example in my own collection so referred.)

The large size, very fine and dense punctulation with the virtual absence of larger punctures, and the very elongate eighth antennal joint easily mark this as an unusually distinct species. It is most closely approached by *densum*, which is distinguished by the sulcate middle tibiæ and more transverse eighth and ninth joints of antennæ.

46. **C. pusillum** Lec.—Brown, somewhat densely clothed with rather long pale yellowish pubescence. Form robust, quite three-fifths as wide as long, not distinctly narrowed behind, a little gibbous in profile; coarser punctuation feeble on the head, but quite strong at the sides of the pronotum and on the elytra. Metasternum sparsely, moderately strongly punctured at middle, the punctures becoming finer laterally and scarcely reaching the sides. Eighth antennal joint triangular, fully one-third longer than wide. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 2.–2.5 mm.

Hab.—Arizona, Yuma (type), Camp Thomas; Lower California (San Jose del Cabo). Some specimens are labellel Alameda Co., California; I suspect erroneously.

47. **C. consobrinum** n. sp.—Dark piceous brown, a little less than three-fifths as wide as long, slightly narrowed from the humeri, distinctly gibbous in profile; pubescence fine and short. Coarser punctures of head numerous and distinct; a little coarser and more conspicuous over a wide area at sides of pronotum; fine but evident across the base of the elytra, becoming rapidly larger at about the basal fourth, then increasing visibly in coarseness toward the apex. Metasternum finely, very sparsely, nearly evenly punctate from side to side, the surface polished and with scarcely visible finer punctuation. Front tibiæ deeply bisulcate almost throughout their length; middle tibiæ not sulcate. Length 2.2–2 7 mm.

Hab.—Arizona (Oracle, Tucson); New Mexico.

Closely related in most respects to *abbreviatum* and *simile*, which see for a statement of differences.

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48. **C. simile** Lec.—Very closely related to *consobrinum*, and it is quite possible that these two are only geographical races of one species. The few specimens seen differ constantly in being of less slender form, the ratio of width to length varying from .58–.61, while in *consobrinum* it is very close to .56 in each of the five examples seen. The coarser punctures of the head are much less distinct in *simile*, and the finer punctuation of the metasternum is quite evident, being almost entirely obsolete in *consobrinum*. Length 2.7–3 mm.

Hab.—Florida (Biscayne and Key Largo).

The region inhabited by *simile* is thus seen to be identical with that occupied by *abbreviatum*, to which both this and *consobrinum* are closely related. *Abbreviatum* is distinctly stouter than either; in several measured specimens the rate of width to length varying from .63–.65; the head is practically devoid of coarser punctures, while those of the pronotum are much finer and less numerous, being confined to the vicinity of the front angles; the lateral striæ of the elytra reach only the apex of the second ventral segment, while in both *simile* and *consobrinum* the lateral striæ or one of them at least reaches the base of this segment, the grooves of front tibiæ while somewhat variable are never so completely developed as in *simile* and *consobrinum*.

49. **C. pingue** n. sp.—Brown, moderately pubescent, broadly ovate, a little more less than three-fifths as wide as long, distinctly gibbous in profile. Coarser punctuation distinct on the anterior portion of the head, becoming obsolete posteriorly; distinct but rather inconspicuous at the sides of the pronotum; a little stronger on the elytra. Metasternum punctate at middle, nearly or quite smooth at sides. Eighth antennal joint fully one-half longer than wide, subparallel externally, apical angle feebly obtuse. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 2.2–3.1 mm.

Hab.—Arizona (Santa Rita Mountains, Oracle, Bright Angel, Pinal Mountains, Williams, Ash Fork).

There is some variation in the distinctness of the intermixed coarser punctures, these being scarcely detectable in the single specimen from Ash Fork.

50. **C. vacuum** n. sp.—Closely related in most respects to *pingue*, but seemingly distinct by its narrower (not over three-fifths as wide as long) and more parallel form, and much coarser intermixed punctuation. In both species the posterior groove of the front tibiæ is deep and not strictly marginal, leaving the intermediate area narrow and quite strongly convex. The anterior groove is less deep and abbreviated basally in *pingue*, but is somewhat better developed in *vacuum*. Length 2.25–2.5 mm.

Hab.—Tucson, Arizona, four examples; Brownsville, Texas, numerous examples (Dury and Barber).

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This species is closely related to the next, which is, however, still more coarsely punctured, and occupies a different faunal region.

51. **C. cicatricosum** n. sp.—Dark brown, moderately pubescent. Rather robust, oblong-elliptical, three-fifths as wide as long, a little gibbous in profile. Coarser punctuation very strong and conspicuous, though relatively less so on the head. Metasternum sparsely punctate at middle, smooth at sides. Eighth antennal joint quadrate-triangular, scarcely one-third longer than wide. Front tibiæ bisulcate, the posterior groove well separated from the margin; middle tibiæ not sulcate. Length 2.3–2.45 mm.

Hab.—Florida. National Museum collection.

52. **C. luteotectum** Fall.—Rufocastaneous, densely clothed with short recumbent luteous hairs, which almost completely conceal the surface sculpture. This when visible is seen to be very fine, with the coarser punctures sparser and finer than usual. Form elongate-elliptical, four-fifths longer than wide, slightly gibbous in profile. Metasternum very sparsely punctate throughout. Eighth antennal joint twice as long as wide, triangular, the sides subparallel outwardly Front tibiæ bisulcate, the grooves marginal and widely separated. Middle tibiæ not distinctly sulcate. Length 3.8–4.3 mm.

Hab.—California (Palm Springs).

In my original description Riverside and Yuma are also cited as localities. These, however, belong to specimens of *vestitum*, which were then confused with the present species. With the exception of *palliatum* no other species is so densely pubescent as this, and except *uniforme* none approach it in extreme length of the eighth antennal joint.

53. **C. geminatum** n. sp.—Castaneous, strongly shining when denuded, pubescence moderate, form faintly gibbous in profile. Surface finely punctulate throughout as usual, the coarser punctures virtually wanting on the head, small and not very numerous at the sides of the prothorax, but more obvious near the front angles; rather strong on the elytra, where they are arranged in well defined double rows which do not reach the base. Lateral striæ continued to base by shallow punctured grooves. Metasternum nearly devoid of larger punctures at sides; front tibiæ bisulcate, the grooves not widely distant; middle tibiæ without marginal groove. Length 3 mm.

A single example from "California" in the Horn collection. The specimen is almost completely denuded, but from remnants of the pubescence I should judge it was not sufficiently dense to conceal the sculpture. This species is of nearly the same size as *luteotectum*, but is slightly less robust and a little less symmetrically arched in profile; the pubescence is also sparser and the grooves of the front tibiæ less widely separated.

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54. **C. gracile** n. sp.—Red-brown, parallel, very nearly twice as long as wide, not at all gibbous in profile; pubescence very fine and rather sparse. Coarser punctures virtually lacking on the upper surface. Metasternum very finely evenly punctulate and finely slutaceous without evident coarser punctures. Inner lateral stria of elytra indistinct, the outer one very short. Eighth and ninth antennal joints strongly transverse and triangular, the eighth almost twice as wide as long. Front tibiæ not very deeply bisulcate; middle tibiæ not sulcate. Length 1.7 mm.

Hab.—Ohio (Cincinnati, Dury).

Two examples only of this very distinct little species have been seen. I suspect that both are males, and if so the strongly transverse eighth and ninth joints of antennæ may prove to be peculiar to the sex.

55. **C. mancum** n. sp.—Red-brown to piceous brown, oblong-elliptical, rather robust, fully three-fifths as wide as long, pubescence moderate. Lateral striæ of elytra finer than usual, the inner one often feeble or indistinct. Coarser punctuation a little variable but usually fine and inconspicuous. Metasternum punctured at middle Eighth antennal joint a little longer than wide, subparallel apically. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 1.7-2.5 mm.

Hab.—California (Sonoma to San Diego).

This is the commonest, most widely diffused and most variable of the California species. Specimens are not rare that show the indistinct subvittate elytra so common in *nebulosum*, but in the latter the lateral striæ are both deeply impressed.

56. **C. validum** n. sp.—Brown, oblong-elliptical, slightly more than half as wide as long, not gibbous in profile, pubescence moderate. Coarser punctures few and fine on the head, most evident near the eyes, distinct but not large at the sides of the pronotum, a little larger on the elytra, especially at sides, where they show a tendency to a serial arrangement. Metasternum finely very sparsely punctured at middle, scarcely at all so at sides. Eighth antennal joint triangular, about one-third longer than wide. Front tibiæ deeply bisulcate; middle tibiæ sulcate. Length 3.4–4 mm.

Hab.—Texas (Belfrage), National Museum collection.

In size and form this species is very similar to *robustum* and *uniforme*, both of which, however, have the middle tibiæ sulcate. There is observable in certain lights a very feeble median longitudinal frontal elevation. This is in no example as distinct as in *fastigiatum*, and may easily be entirely overlooked.

57. **C. confusum** n. sp.—Dark piceous brown, oblong-elliptical, a little less than three-fifths as wide as long, not obviously gibbous in profile; pubescence moderate. Coarser punctures small but evident on the head, numerous and

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rather large at the sides of the pronotum and on the elytra. Metasternum quite numerously and moderately strongly punctate at middle, rather broadly impunctate at sides. Eighth antennal joint quadrate-triangular, scarcely more than one-fourth longer than wide. Front tibiæ bisulcate, middle tibiæ not sulcate. Length 2-2.7 mm.

Hab.—Texas (San Diego, Columbus, Beeville, Luling, Hockley, San Antonio, Fedor); Indian Territory (Atoka, Vinita, South McAlister); Illinois; Kentucky; Ohio; Kansas; Louisiana; Iowa; Lower California (Santa Rosa).

Under this name I have placed a large number of specimens from a wide range of territory. There is considerable variation in the development of the coarser punctuation and some are very feebly gibbous in profile; these latter approach so closely to the less strongly gibbous form of *vacuum* that it is next to impossible to separate them with certainty. Typical examples of the two species are easily separable, the present species being scarcely at all gibbous in profile, while *vacuum* is rather strongly so. For the rest it can only be said that in *confusum* the pubescence is a little longer and denser, the punctuation somewhat finer and the impression along the anterior marginal line of the metasternum externally is more gradual and feebly defined, while in *vacuum* it is more abrupt and in the form of an elongate fovea. The assumed polymorphism of *confusum* is probably not real, and I have little doubt that I have confused several closely allied species, but they are not separable by any constant characters that I can at present discover.

The Lower California series is in itself complex and varies both above and below the limits of size mentioned for the Texas specimens, which are to be considered the types. *C. herbarum* Gorh., St. Vincent, W. I., is nearest *confusum*, but the head and pronotum are almost destitute of any trace of coarser punctures. These are quite large and conspicuous in the elytra, with a distinct tendency toward arrangement in lines.

58. **C. angustum** n. sp.—Dark brown, moderately densely pubescent; form unusually elongate, not gibbous in profile. Coarser punctures few and small on the head and prothorax, much more numerous and of medium size on the elytra. Metasternum punctured from side to side, the punctures not much closer at the middle. Front tibiæ bistriate, middle tibiæ without marginal groove. Length 2.5 mm.

Kansas, Hamilton County (Snow).

One of the more conspicuously elongate forms; the metasternum however, is of normal length.

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59. **C. parvum** n. sp.—Red brown, shining, pubescence fine and rather sparse, form more elongate than usual, less than three-fifths as wide as long, not at all gibbous in profile. Punctuation sparse and fine, with scattered inconspicuous somewhat larger punctures. Metasternum with a few fine punctures at middle, these disappearing before reaching the episterna. Front tibiæ bisulcate, middle tibiæ non-sulcate. Length 1.75 mm.

Northern Illinois A single example submitted by Mr. Blanchard.

The genera facies suggests *castaneum*, but the form is more elongate and the pubescence of normal length.

60. **C. turbidum** n. sp.—Reddish brown, moderately pubescent, not at all gibbous in profile. Coarser punctures numerous and very conspicuous, rather densely crowded at the sides of the pronotum, becoming smaller and sparser toward the middle; coarse and evenly distributed on the elytra; interspaces between the coarser punctures distinctly finely punctulate. Metasternum finely punctate at middle, scarcely at all so at sides. Front tibiæ bisulcate, middle tibiæ nonsulcate. Length 1.5 mm.

Georgia. A single example in the Horn collection.

The present species may be at once separated from all others in its vicinity by the small size and coarse sculpture. Of our other species *dispar* alone is comparable in size, and in this the pubescence is very short, the finer punctuation lacking, and the middle tibiæ sulcate.

61. **C. auctum** Lec.—Red-brown to piceous brown, oblong-elliptical, scarcely at all gibbous in profile. Coarser punctures of upper surface moderately strong and numerous, punctuation of the metasternum most pronounced at the middle, but with sparser finer punctures reaching quite to the sides. Eighth antennal joint quadrate-triangular, not much longer than wide. Length 1.6–2.3 mm.

Hab.—Florida, Capron (type), Baldwin, Pensacola, Tampa, Key West, Miami, Key Largo.

The type is very small, red-brown, with distinct traces of a third shallow inner stria at the middle of the elytra. Miami and Key Largo specimens are uniformly darker brown and of larger size. In the series before me these latter are almost perfectly connected by intermediates with the type which I suspect is really aberrant. The elevated granule at the side of the elytra mentioned by LeConte does not exist, a fact of which I was thoroughly satisfied, even before giving the type a careful examination. The punctuation of the sides of the metasternum is very sparse but seems to be always present, and with some experience I believe this character sufficient to distinguish *auctum* from *indistinctum*, which is also a trifle less robust and a little less coarsely punctured.

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62. **C. indistinctum** n. sp.—Brown, oblong-elliptical, very nearly three-fifths as wide as long, not gibbous in profile, moderately pubescent. Coarser punctuation evident but not conspicuous. Metasternum punctate at middle, the punctures virtually or quite lacking at sides. Eighth antennal joint quadrate-triangular, a little longer than wide. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 1.7–2.3 mm.

Hab.—Washington, D. C. (type); Piney Point, Maryland; Roslyn, Virginia; Detroit, Michigan; Punta Gorda, Florida.

The Florida specimens are very slightly more strongly punctured but do not seem otherwise separable. They resemble *debile* quite closely, but this latter species has the middle tibiæ sulcate and is more finely sculptured.

63. **C. exiguum** n. sp.—Brown, elliptical, rather strongly convex and almost two-thirds as wide as long, not gibbous in profile, pubescence moderate. Coarser punctures fine and few on the head, evident but small near the side margin of the pronotum, larger but sparse and not conspicuous on the elytra. Metasternum punctate at middle, broadly smooth at sides. Eighth antennal joint quadrate-triangular, a little longer than wide. Front tibiæ bisulcate, the grooves widely distant; middle tibiæ not sulcate. Length 1.6–1.9 mm.

Hab.—California (Pomona, Los Angeles, Poway); Lower California (Santa Rosa).

There is no other known species in the region in which this occurs with which it can be confused.

64. **C. obsoletum** Lec.—Piceous brown, the head, thorax and abdomen dark rufous or rufescent; oval, three-fifths as wide as long, the sides of the elytra feebly divergent from the humeri to the middle, profile scarcely gibbous, pubescence moderate. Coarser punctures nearly lacking on head and pronotum; elytra thickly punctulate, the coarser punctures rather small though evident. Metasternum rather coarsely punctate at middle; sides broadly subimpunctate, an elongate fovea close to the raised front margin and near the sides. Eighth antennal joint quadrate-triangular, a little longer than wide. Front tibiæ bisulcate; middle tibiæ not sulcate. Length 2–2.5 mm.

Hab.—Lower California (Cape San Lucas).

The widening of the elytra posteriorly is an almost unique character, observed elsewhere only in *latum*. The latter is a wingless littoral species, and it is not unlikely that *obsoletum* is like it in these respects. We have no knowledge of the condition of capture, and the species is still known only by the few original specimens taken by Xantus. It is doubtless a significant fact that the metasternal fovea of *obsoletum* is also distinctly indicated in *latum*.

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CRYPTORAMA new genus.

This genus contains a few small species which differ from *Catorama* primarily in the 11-jointed antennæ, absence of the intercoxal hook, and in the very narrowly exposed met-episterna. The head is deeply excavated beneath for the antennæ; the eyes are not at all compressed; the terminal joint of palpi narrow and elongate, very little dilated apically; the scutellum transverse and broadly rounded or subtruncate behind, instead of acute as in *Catorama*. The middle coxæ are widely separated, the mesosternum horizontal in front, becoming vertical and deeply recessed behind under the overhanging metasternum, the front margin of which is truncate and feebly sinuate. The outer face of the front tibia is concave beyond the middle, without marginal or submarginal striæ; the hind coxal plates are more distinctly widened externally; the first tarsal joint fully equal to the next three, and more evidently compressed than in *Catorama*. The elytra are without submarginal striæ. In two of our species the hairs of the upper surface are so directed as to form more or less obvious whirls or vortices. In other points of structure the genus does not differ materially from *Catorama*.

Four species are known to me, two of which were described by LeConte, and assigned by him to *Catorama*.

Form more oblong and elongate, twice as long as wide.
Side margin of prothorax explanate posteriorly; surface dull, minutely alutaceous between the punctures; pubescence normal in arrangement. 1. **oblongum.**
Side margin of prothorax not explanate; surface shining; not at all alutaceous, pubescence vortical ..... 2. **vorticale.**
Form more oval, less than twice as long as wide.
Pubescence normal in arrangement ..... 3. **minutum.**
Pubescence vortical ..... 4. **holosericeum.**

1. **C. oblongum** n. sp.—Oblong-oval, twice as long as wide; brown, surface dull, finely alutaceous; evenly moderately closely finely punctulate throughout; clothed with very short luteous appressed pubescence, which is not vortical in arrangement. Eyes moderate in size, their vertical diameter subequal to half the width of the front. Sides of prothorax flattened at the hind angles. Length 2.5 mm.

Hab.—Santa Rosa, Lower California.

One example sent by Mr. Beyer.

This species at long range bears a deceptive resemblance to certain elongate *Catoramas*, notably *punctulatum*. In shape and size

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it is similar to *vorticale*, but is easily distinguished by the characters given in the table, in addition to which it may be said that the pubescence is shorter and less dense.

2. **C. vorticale** n. sp.—Oblong-oval, twice as long as wide, brown, moderately shining, finely, evenly not closely punctulate throughout; pubescence rather dense, ochreous in color, the hairs at various points changing in direction so as to present a whorled or subvortical arrangement. Eyes large, their vertical diameter fully two-thirds as great as the width of the front. Prothoracic margin not explanate posteriorly. Length 2.3–3 mm.

Hab.—Southern Florida (Biscayne, Miami, Elliot's Key, Key Largo, Key West); Texas (Victoria).

Described from numerous example sent by Schwarz and Beyer. The Texas specimen is not quite like the Florida ones in all respects, but is placed here provisionally.

Var. *minor*.—Three examples in the Hubbard and Schwarz collection seem to agree in all essentials with the above, but are much smaller, 1.5–1.7 mm in length. As no intermediate forms have been seen, it is possible that these represent a closely allied species, but I prefer for the present to cite them as a variety of *vorticale*. They are from Biscayne and Key West.

3. **C. minutum** Lec.—Oval, moderately elongate, black varying to brown, legs and antennæ rufous; finely, evenly, not closely punctulate throughout, pubescence moderate, cinereous. Eyes small, their vertical diameter scarcely more than one-third the width of the front. Length 1.5–2 mm.

Hab.—Florida (Enterprise, type); Indian Territory (Atoka, Wickham); Texas (Columbus, San Diego, Brownsville).

The Indian Territory and Texas specimens are very slightly less robust than the Florida ones and average a little larger in size, but as they vary somewhat among themselves in these particulars, the differences are probably not specific.

4. **C. holosericeum** Lec.—Elongate-oval, black or brown, finely evenly punctulate and conspicuously grayish pubescent, the hairs so directed as to give the appearance of an oval dark spot at the middle of each elytron, and forming complete or incomplete whorls at several other points. Eyes small, their vertical diameter subequal to one-third the frontal width. Length 1.4–1.7 mm.

Hab.—Florida (Haw Creek, Enterprise, Biscayne, St. Lucia, Key West); New Jersey (Anglesea, Wenzel).

A beautiful little species when in perfect condition. It can only be confused with *vorticale* var. *minor*, which is of about the same size; the latter is, however, distinctly more elongate and with larger eyes.

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STICHTOPTYCHUS new genus.

Form elongate-oval, convex, similar to *Catorama*, with which it agrees in its oval form and tarsal structure, slightly compressed eyes, dual system of punctuation and other respects except as follows: The head is very deeply excavate anteriorly for the antennæ; the latter are 11-jointed; joints 2–8 of very nearly equal width, the second and third slightly elongate, fourth to eighth evidently transverse and inwardly subserrate. Ninth and tenth triangular, longer than wide; eleventh longer, oval; ninth to eleventh subequal to all the preceding. Scutellum transverse, sinuately pointed behind. Elytra punctate striate. Met-episterna parallel, narrowly exposed. Middle coxæ distant, the mesosternum recessed beneath the metasternum, which is produced in the form of a short, very strongly transverse deflexed lobe similar (except in its deflection) to that of *Dorcatoma*. Metasternum broadly longitudinally sulcate as in *Dorcatoma*, with which genus it further agrees in its arcuate ventral segments and non-sulcate front tibiæ.

A single species from our extreme southern border represents this genus, which is in many respects intermediate between *Catorama* and *Dorcatoma*. It is very closely related structurally to *Protheca*, from which the small differences given in the table would doubtfully have served to separate it, but for the much larger size and very different facies.

1. **S. agonus** n. sp.—Elongate-oval, convex, black, antennæ and tarsi pale; pubescence fine, rather sparse, ochreo-cinereous. Eyes rather small, somewhat flattened, their vertical diameter about one-third the width of the front. Head finely punctulate with numerous evenly distributed coarser punctures. Prothorax of the usual form in *Catorama*, except that the front as well as the hind angles are rounded; surface minutely closely punctulate with larger punctures intermixed; the latter rather sparse at the middle of the disk, but becoming rapidly coarser and denser laterally where they are almost in mutual contact. Elytra with regular rows of closely placed punctures, the interspaces sparsely more finely punctured, and the whole surface closely very minutely punctulate. Metasternum distinctly punctate, the punctures nearly evenly distributed, but coarser and therefore somewhat closer anteriorly. Abdomen rather sparsely punctate with the usual minute punctuation. Tibiæ evenly convex and punctate externally. Length 3–3.5 mm.

Texas (Brownsville). A small number of specimens collected by Wickham, Schaeffer and Townsend.

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PROTHECA LeConte.

This genus was proposed by LeConte for two small species of oblong oval form, semi erect pubescence and punctate-striate elytra. The antennæ were described as 11-jointed, but this applies to one of them only, the other having these organs 9-jointed; in both cases of the type prevailing in allied genera. The last palpal joints are triangular, compressed, nearly as wide as long, with the apex broadly somewhat obliquely truncate. Head deeply excavated beneath for the antennæ. Eyes rather small and only moderately convex, clypeal suture not impressed, obsolete. Prothorax convex, transverse, gradually narrowed in front, the sides nearly straight; hind angles rounded, front angles right and sharply defined. Elytra punctate-striate. Prosternum very short, intercoxal process pointed; coxæ depressed, nearly contiguous. Mesosternum horizontal for a short distance in front, vertical and concave behind. Metasternum channeled, declivous each side, produced between the middle coxæ into a short impressed transverse lobe. Middle coxæ separated by fully two-thirds their own width. Epipleuræ excavated beneath the humeri for the reception of the middle knees, sinuate at the margin and foveate for the hind knees; ventral segments arcuate at middle. Tibiæ not compressed or striate.

Our two species may be distinguished thus:

Antennæ 11-jointed, punctures of elytral series fine, obsolete posteriorly.
1. **hispida.**

Antennæ 9-jointed, punctures of elytral series coarser, distinct to apex.
2. **puberula.**

1. **P. hispida** Lec.—Oblong-oval, scarcely twice as long as wide, brown; pubescence conspicuous, the hairs in part more or less bristling or suberect and changing in direction, though not as distinctly vortical as in *Cryptorama holosericea* and *C. verticalis*. The arrangement is such as to leave a conspicuous darker spot on each elytron before the middle in well preserved specimens. Antennæ 11-jointed, first joint large, second rounded, thicker than the following; 3-8 small, triangular, the third slightly elongate; 4-8 transverse, third, fifth and seventh a little more prominent internally; ninth and tenth subtriangular, one-half longer than wide; eleventh longer, oval; 9-11 together as long as all the preceding. Prothorax coarsely not sparsely punctured; elytra not striate, but with series of moderate punctures which are frequently more or less confused and which become obsolete behind the middle. The entire upper surface minutely punctulate in addition to the more conspicuous punctuation. Scutellum transverse. Metasternum nearly evenly punctate throughout. Abdomen a little less conspicuously but quite plainly so. First tarsal joint nearly equal to the three following. Length 1.6-2.4 mm.

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This species ranges from the vicinity of New York to Florida and along the Gulf to Central Texas. The following localities are represented in the material seen: New Jersey (Ft. Lee, Schaeffer); Pennsylvania; Delaware; Maryland; District of Columbia; North Carolina (Round Knob, Hubbard and Schwarz); Georgia (type); Florida (Enterprise and Key West, Hubbard and Schwarz); Alabama (Mobile, Soltau); Louisiana (Baton Rouge); Texas (Columbus).

2. **P. puberula** Lec.—Oval, less than twice as long as wide, dark brown, moderately shining. Pubescence normal, inclined, fine and rather sparse. Antennæ 9-jointed; first joint moderately thick, second much smaller, subglobose; third to sixth equal in width, the third obconical; fourth to sixth shorter, distinctly transverse; seventh to ninth forming a broader club, longer than the preceding united, the joints of the form and proportions described in the preceding species. Prothorax rather coarsely but not deeply punctate, the punctures moderately sparse at the middle of the disk, closer laterally. Scutellum as long as wide. Elytra feebly striate, the striæ closely regularly punctate; the punctures becoming finer apically. Beneath sparsely punctate and with the usual minute punctuation. First tarsal joint shorter than the next two combined. Length 1.7-2.2 mm.

Hab.—Massachusetts (rare at Tyngsboro, Blanchard); New Jersey (Orange Mountains); Pennsylvania; District of Columbia; Maryland; Virginia; West Virginia; Georgia; Florida (Baldwin); Michigan.

Nearly as widely dispersed as the preceding, from which it may be distinguished, aside from the tabular differences, by the sparser normally directed pubescence, more elongate scutellum and shorter basal tarsal joints There appears to be very little sexual difference in the size of the eyes, but some examples have the abdomen distinctly flattened or a little concave along the median line, and it is probable that these are males.

DORCATOMA Herbst.

Body oval, moderately elongate, convex, pubescence either recumbent or erect. Head not excavated beneath; eyes moderate or rather large, slightly roundly emarginate, clypeal suture deeply impressed. Last joint of Maxillary palpus elongate securiform, the outer edge a little oblique; last joint of labial palpus more broadly triangular, apex squarely truncate and feebly sinuate. Antennæ 10-jointed; first joint large, auriculate; second much smaller, dilated at middle; third to seventh narrower and very small, the third

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as long as wide, fourth to seventh strongly transverse, very compactly joined, together less than twice as long as their width; eighth to tenth forming a broad club much longer than all the preceding; eighth transversely triangular, more or less emarginate on apical edge, about as long as the six preceding; ninth similar but less strongly transverse; tenth elongate oval Prothorax evenly convex, sides nearly straight. Elytra with two nearly entire marginal striæ, and in some species a shorter basal third stria. Prosternum short, concave, produced behind into two long more or less widely separated processes, which fit into excavations of the mesosternum. Anterior coxæ widely distant, perpendicular, entirely concealed in repose. Mesosternum deeply excavated and largely concealed under the metasternum, which is more or less channeled longitudinally, and produced between the widely separated middle coxæ in a short broad lobe, which is squarely truncate in front and more or less narrowed behind by the tarsal grooves. Ventral sutures anteriorly arcuate at middle, deeper at sides. Tibiæ not compressed. Tarsi short, first joint as long as the two or three following, these very strongly transverse and somewhat emarginate; terminal joint longer, stout.

I have restricted this genus to those species in which the prosternum is produced behind into two long slender horn-like processes. This peculiar structure is not mentioned in any of the European works to which I have had access, and though properly described by LeConte in his diagnosis of *Dorcatoma*, more than half of the species referred by him to this genus do not possess this character. Of the species on our present list *incomptum*, *tristriatum* and *granum* have therefore been removed from *Dorcatoma*, and with *intermedium* erroneously referred by LeConte to *Cœnocara*, and several undescribed species are made to constitute the new genus *Eutylistus* herein described.

Our species of *Dorcatoma* * are then three in number, separable as follows:

* Of the eight European species of *Dorcatoma*, five—*dresdensis*, *setosella*, *chrysomelina*, *serra* and *dommeri*—are before me. The first four of these are doubtless true members of the genus, though I have verified the existence of the prosternal horns in the first two only. *Dommeri* would fall in *Eutylistus*. Of the three remaining species, *punctulata* and *flavicornis* I should judge from their relations to the above, were properly referred; of *lanuginosa* I know nothing.

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Pubescence of upper surface recumbent.

Black, more coarsely and more uniformly punctate; joints of antennal club more strongly produced internally... .....1. **dresdensis.**

Brown, more finely punctate, with rather inconspicuous larger punctures sparsely placed.....2. **integer.**

Pubescence erect ....3. **setulosum.**

1. **D. dresdensis** Herbst.—Oval, moderately elongate, convex; black' tibiæ more or less rufous, tarsi and antennæ paler; surface shining, with fine recumbent grayish pubescence. Head finely punctate, the punctures separated by from one to two times their own diameters; eyes moderate, scarcely larger in the males, distant on the front by nearly twice their vertical diameters. Antennæ rufotestaceous, the basal joint darker; fourth joint a little more prominent internally; joints 8 and 9 moderately emarginate on their apical edge in the female, more elongate and emarginate so deeply as to become branched in the male. Terminal joint of maxillary palpus slender, more than twice as long as wide, slightly widening toward the apex; last joint of labial palpi broadly triangular, apex transversely truncate and minutely sinuate. Prothorax short, sides strongly convergent and nearly straight, side margin narrower, not visible from above; punctuation nearly as fine as that of the head, nearly uniform in size, the punctures separated by from one to two times their own diameters. Elytra rather more than three times as long as the prothorax, parallel to beyond the middle; punctuation nearly uniform, distinctly coarser and usually closer than that of the prothorax, but somewhat variable; sides with two submarginal striæ, the outer entire, the inner sometimes a little abbreviated or more faintly impressed at apex. There is usually a well marked trace of an inner third stria immediately behind the humeral umbone. Metasternum deeply longitudinally sulcate throughout its length and usually with a short oblique impression on each side the median sulcus; punctuation very sparse and fine at middle, denser and coarser laterally, especially in front, where the punctures are obviously though not very conspicuously unequal in size. Abdomen more finely and evenly, and less closely punctate than the metasternum. Length 2.5-3 mm.

This rather common species occurs throughout the northern United States and Canada as far west as Montana (Kalispell, Wickham) and south to Virginia and Missouri. It was described by LeConte under the name *pallicornis* in Austin's list of the Coleoptera of Mt. Washington, but I am quite unable to separate it from European specimens of *dresdensis*, a species common and wide spread in northern and middle Europe.

2. **D. integer** Fall.—Similar in form to *dresdensis;* brown, with legs and antennæ paler; pubescence ochreous in color, fine, recumbent. Punctuation finer throughout than in *dresdensis*, the punctures of the upper surface inconspicuously, and of the metasternum distinctly, varying in size. Fourth joint of antennæ not prominent internally, the joints of the club not as wide as in *dresdensis*, the eighth and ninth feebly or scarcely emarginate apically, the latter longer than wide. Submarginal striæ of elytra a little finer than in *dresdensis*,

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the second not quite as long as the outer, a fine third stria extending from base under the humeral umbone nearly to the middle. Metasternum lightly sulcate at middle. Length 2.3–2.8 mm.

Hab.—Lake Tahoe, California.

The two examples in my collection exhibit no differences in antennal structure, these organs being similar to but with rather smaller club than those of the female of *dresdensis*. It is quite likely that both examples are females and that the males may approach those of *dresdensis* in the strongly modified outer joints. This species was incorrectly described by me as an *Hemiptychus*.

3. **D. setulosum** Lec.—Oval, moderately elongate, black, feet rufescent, antennæ pale; surface shining, pubescence sparse, short, erect. Punctuation of head and pronotum fine and sparse, that of the elytra a little coarser, but still much finer than in *dresdensis*, and forming more or less regular rows which show a very slight tendency in some examples toward approximation in pairs. Submarginal striæ two in number, the inner slightly abbreviated at apex. Eyes much larger in the males, though apparently variable in size, the front in some examples being narrower than the width of the eye, while in others it is a little wider than the ocular width. Antennæ of same type as in *dresdensis*, but with the fourth joint not at all more prominent internally, and the apical edge of the eighth and ninth joints less deeply emarginate in the male and scarcely at all so in the female. Lower surface finely punctate; metasternum very sparsely so posteriorly, more closely in front, the punctures varying in size; ventral segments uniformly finely punctate. Length 1.75–2 mm.

The following localities are known to me or are authoritatively reported: Canada, New Hampshire, New York, New Jersey, Pennsylvania, District of Columbia, Virginia, Ohio, Michigan, Illinois, Kansas, Georgia, Louisiana.

BYRRHODES LeConte.

The only character of importance distinguishing this genus from *Eutylistus* is the striation of the elytra. The form is broadly oval, convex, clothed with short, confused, grayish hairs, which are subrecumbent. The terminal joint of the maxillary palpus is moderately elongate-securiform; of the labial palpus broadly subtriangular, the apex squarely truncate and emarginate, leaving the outer angle acute, the inner rounded. Antennæ 9-jointed, similar in structure to *Eutylistus*, except that the third joint is a little prominent interiorly. Epistomal suture impressed. Eyes minutely barely visibly sinuate in front. Elytra striate throughout, the lateral striæ very little deeper than the discal. Metasternal lobe squarely truncate in front, the outer angles a little acute, scarcely at all nar-

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rowed at base by the tarsal grooves. Ventral segments second to fourth equal, fifth not quite as long as the two preceding united, the sutures a little finer at the middle, where they are slightly arcuate, especially toward the base. Other characters are substantially as in *Eutylistus*.

One species only is known.

1. **B. setosus** Lec.—Robust, oval, dark brown, rather densely clothed above with grayish confused subrecumbent hairs; surface shining. Head finely sparsely punctate; front a little wider than the longest diameter of the eye. Prothorax rather sparsely not coarsely punctate, the punctures faintly tuberculiform (their margins slightly raised), the interspaces minutely punctulate. Elytra densely finely punctulate throughout, the interspaces nearly flat on the disk, feebly convex laterally, very much wider than the sharply impressed striæ, of which the two outer ones are more deeply impressed posteriorly. Lower surface, especially the metasternum, more sparsely pubescent; very minutely and sparsely punctulate throughout, the metasternum scarcely visibly so. Metasternum with a fine sulcus or elongate fovea anteriorly. Length 3-3.5 mm.

The larger measurement above is that given by LeConte, whose type was taken at Capron, Florida. The single specimen before me was captured at Enterprise, Florida, by Mr. Beyer, and is now in the National Museum collection. LeConte says the antennæ are 10-jointed, but I can count only nine joints in the specimen at hand. The fifth joint of the tarsi is as in allied genera, distinctly longer than the preceding and not equal to it as described by LeConte, whose description is also inaccurate in some other details.

EUTYLISTUS new genus.

The present genus is established for those species hitherto referred to *Dorcatoma*, in which the prosternum is broadly truncate-emarginate behind, without processes. The form is as a rule more broadly oval, the punctuation simpler and the fifth ventral segment relatively longer than in *Dorcatoma*, but otherwise the two genera are nearly identical in structure. The antennæ are either 8-, 9-, or 10-jointed, and of the same type as in *Dorcatoma*. The intermediate joints are so small and so compactly joined that they are exceedingly difficult to count, and it is not impossible that there may prove to be some individual variation in number. The emargination of the eye, although small, is inclined to be narrower and more acute than in *Dorcatoma*. Those species at the end of the genus—*granus*, *fallax*, etc.—by their more rotundate form and non-sulcate metasternum form a natural transition to *Cœnocara*. Our species are moderately numerous and are as a rule easily separable.

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Elytra rather densely punctured in longitudinal bands which are separated by narrower smooth lines.
Elytra without well-defined third stria .....2. **incomptus.**
Elytra with a well defined though shorter third inner stria at sides.
Lateral striæ coarser, third stria more median in position, size smaller (Pennsylvania to Texas).....3. **tristriatus.**
Lateral striæ fine, third stria more posterior, size larger (California).
4. **ulkei.**
Elytra more sparsely punctate, the punctures frequently forming more or less regular rows, but not arranged in longitudinal bands, except obscurely in *levisternus*.
Submarginal striæ entire, and nearly equally deep from base to apex.
Elytra with an inner third stria.
Third stria median in position.....5. **levisternus.**
Third stria basal ..... 6. **granus.**
Elytra with two lateral striæ only..... 1. **intermedius.**
Submarginal striæ abbreviated, or at most very faintly impressed at base.
Base of metasternal lobe evidently narrowed by tarsal grooves; metasternum distinctly punctate .....7. **fallax.**
Base of metasternal lobe scarcely at all narrowed by tarsal grooves; metasternum nearly impunctate.....8. **facilis.**

1. **E. intermedius** Lec.—Broadly oval, shining black, the mouth and legs more or less rufous or rufescent. Pubescence sparse, gray, erect or suberect. Antennæ 8-jointed (see figure). Eyes moderate, separated on the front by less than twice their vertical diameter. Head sparsely punctulate; prothorax finely but more closely punctate; elytra more strongly punctate in irregular rows and with two entire or subentire marginal striæ. Metasternum sparsely rather finely punctate, median sulcus obsolete posteriorly, terminating anteriorly in an elongate fovea. Ventral segments finely, moderately closely punctate, the sutures deep from side to side and scarcely or feebly arcuate at middle. Length 1.7–2.2 mm.

Specimens are known to me from Massachusetts (Tyngsboro); New York; Virginia (Pennington Gap and Roslyn); West Virginia (Fort Pendleton); Ohio (Cincinnati); Michigan (Grand Ledge and Detroit); Arkansas; North Carolina (Highlands); Florida.

2. **E. incomptus** Lec.—Oval, moderately elongate, brown or piceous, head, pronotum (rarely), under surface and legs rufous, antennæ and tarsi pale; pubescence recumbent or subrecumbent, yellowish gray. Eyes separated on the front by more (♀) or less (♂) than their vertical diameter, the distance in the ♂ equaling very nearly the ocular width as seen from the front. Antennæ 10-jointed, the eighth and ninth joints (♂) strongly transverse, rather deeply emarginate apically, the tenth somewhat arcuate; club much smaller in the female. Head, pronotum and under surface finely, nearly evenly, and not closely punctate. Elytra finely closely punctate in longitudinal bands, which are separated

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by narrower, smooth unimpressed lines. Lateral striæ two, both obliterated before reaching the base. Metasternum rather deeply sulcate, the anterior lobe only slightly constricted by the tarsal grooves; ventral sutures arcuate at middle. Length 2-2.25 mm.

Described by LeConte from Pennsylvania and South Carolina (Zimmerman). Specimens before me are from Tyngsboro, Massachusetts (Blanchard); Pennsylvania (Bowditch); Washington, D. C. and Detroit, Michigan (Hubbard and Schwarz); Southern Illinois (Soltau).

The peculiar elytral punctuation is repeated in the two following species, and obscurely in *levisternus*, all of which differ from *incomptus* in being of stouter form and in having a well marked third stria at the sides of the elytra.

3. **E. tristriatus** Lec.—Very similar to *incomptus*, differing only in its somewhat larger size, more robust form, and in having a well defined third inner lateral stria which is abbreviated both before and behind. Length 2-2.5 mm.

The type was described from "Bosque Co., Texas (Belfrage)." I have seen specimens from Texas; Georgia (St. Catherine Island); Florida (Key Largo); Maryland (Plummer's Island); Pennsylvania and "New York?" (Chittenden). One example in my collection from Louisiana is not quite typical.

4. **E. ulkei** n. sp.—Closely allied to the two preceding species, the latter of which it most nearly resembles in its robust form and in possessing a third inner lateral elytral stria. The size is distinctly larger than in *tristriatus*, being equal in length to a large *Dorcatoma dresdensis* but much stouter. The inner stria begins farther back, not attaining anteriorly the posterior margin of the metasternum, and is formed by one of the smooth lines becoming finely impressed. The two outer striæ are also much more finely impressed than in *tristriatus*. In color the head, thorax and under side are rufous, the elytra blackish in one example; the other is entirely castaneous.

Described from two examples from California (locality unknown) in the Ulke collection.

5. **E. levisternus** n. sp.—Broadly oval, rufotestaceous, with sparse erect pubescence, which is inclined forward on the prothorax, and in various directions on the elytra, much as in *Cænocara*. Antennæ apparently 9-jointed. Head very sparsely minutely punctulate. Prothorax nearly equally finely but more closely punctulate, with scattered shallow coarser punctures, which are numerous at sides, but more sparsely placed at middle. Elytral punctures arranged in longitudinal bands, though somewhat obscurely so. In *incomptus*, *tristriatus* and *ulkei* these bands are about four punctures in width, the punctures closely placed without trace of serial arrangement. In *levisternus* the bands are made up of three fairly regular series of punctures which are mutually not much more nar-

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rowly separated than the bands themselves, the two outer striæ of the elytra are entire, the third stria more finely impressed and extending from the base to the apical fourth. Lower surface subimpunctate; metasternum longitudinally impressed at middle, with a sharply defined linear fovea or furrow at bottom of the impression; the anterior lobe feebly narrowed at base by the tarsal grooves. Ventral sutures deep from side to side, arcuate at middle. Length 2.1 mm.

Described from a single specimen collected at Biscayne, Florida, and now in the Horn collection. The front between the eyes is subequal in width to the longest diameter of the eye; the first joint of antennal club triangular, a little transverse, with the apical edge faintly sinuate. These characters seem to indicate that the type is a female, but this is by no means certain. *Levisternus* forms an admirable connecting link between the species which precede and those which follow it. The smooth lower surface is seen elsewhere only in *facilis* and in *Byrrhodes;* the duplex punctuation of the pronotum does not occur elsewhere in *Eutylistus,* and reminds one of *Catorama.*

6. **E. granus** Lec.—Broadly oval, robust, rufous or rufopiceous, surface polished, pubescence ochreous, very sparse, erect. Antennæ 8-jointed, the first joint of the club triangular, a little transverse, moderately acute inward, and not differing much in the sexes. Eyes separated by less than their own width as seen from the front in the male, and by a distance subequal to their longest diameter in the female. Head minutely sparsely punctulate. Prothorax sparsely finely, nearly evenly punctate. Elytra sparsely punctate, the punctures a little coarser than on the prothorax and arranged somewhat in rows. Metasternum sparsely, nearly evenly punctate, the punctures coarser than at any other part of the surface; median channel entirely lacking; anterior lobe (fig. 32) deeply constricted at base by the tarsal grooves. Ventral segments sparsely finely punctate, the sutures deep at sides, becoming very fine at middle, where they are somewhat arcuate. Length 1.3–1.5 mm.

Occurs only in Southern Florida. The types are from Enterprise; the specimens before me are from Biscayne and Key West.

7. **E. fallax** n. sp.—Broadly oval, robust; rufous to castaneous in color; pubescence sparse, erect. Antennæ 9-jointed, first joint of club transversely triangular, strongly produced inwards in the male, similar but less acute inwardly in the female. Eighth joint elongate-triangular in both sexes. Eyes separated by about half their own width in the male, and by their own width in the female. Head minutely very distantly punctulate. Pronotum finely not closely punctate, the punctures nearly uniform in size and distribution. Elytra more strongly but not coarsely punctured in more or less regular rows. Submarginal striæ two in number, nearly obliterated before reaching the base. Metasternum coarsely numerously punctate anteriorly, smoother posteriorly, not at all sulcate at middle; anterior lobe (fig. 33) evidently but not very strongly narrowed at

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base by the tarsal grooves. Ventral segments more finely and sparsely punctate than the metasternum, the sutures deeper at sides and arcuate at middle. Length 1.5–1.7 mm.

This species is probably confined to Southern Florida. Single examples have been seen from Enterprise, Haw Creek and St. Lucia (Hubbard and Schwarz collection), and a fourth specimen in the material sent by Mr. Bowditch is labeled simply "Florida."

8. **E. facilis** n. sp.—Broadly oval, rufopiceous or castaneous, polished, pubescence ochreous, very sparse, erect. Antennæ 9-jointed, of the same type as in allied species. Head nearly smooth, the front subequal to the width of the eye as seen from the front in the male, and about equal to the longest diameter of the eye in the female. Prothorax sparsely finely punctate. Elytra sparsely finely punctate, the punctures arranged in fairly regular rows. Lateral striæ two in number, obliterated in front at a point nearly opposite the hind coxal plates. Lower surface almost impunctate. Metasternum broadly feebly longitudinally impressed, the anterior lobe (fig. 34) scarcely at all constricted at base by the tarsal grooves. Length 1.75 mm.

Described from a series collected at Victoria, Texas, by Mr. Schwarz, who writes me that it was found in a hard tree fungus (probably *Agaricus*) in company with *Arrhenoplita ferruginea* and *Ennearthron* sp.

CÆNOCARA Thomson.

Body subglobose or rotundate oval, surface polished, deeply punctate, and clothed with sparse erect or suberect pubescence. Antennæ 9-jointed; first joint large, auriculate; second small, dilated at middle; third to sixth very small and compactly joined, the third as long as wide; fourth to sixth very short, strongly transverse and gradually increasing in width; seventh transversely triangular, the inner angle acute, and strongly produced in the male; eighth elongate, a little wider apically, as long as the transverse diameter of the preceding joint, which is hollowed on its outer edge to receive it; ninth elongate-oval, frequently more or less arcuate in the male. Terminal joints of palpi triangular, apex truncate, the form varying in the different species. Eyes variable in size, more or less deeply acutely incised, frequently almost divided. Head not distinctly excavated beneath. Prosternum short, concave, broadly truncate behind; front coxæ widely separated. Mesosternum concave, horizontal in front; vertical, deeply concave and recessed beneath the metasternum behind; middle coxæ widely distant; metasternum large, not channeled, produced between the middle coxæ into a short, broad, anteriorly truncate lobe, which is strongly con-

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stricted behind by the tarsal grooves. Ventral segments 1–4 slightly decreasing in length, first deeply excavated for the hind legs and nearly concealed by them; fifth subequal to the two preceding united. Ventral sutures deep, feebly or scarcely arcuate at middle. Legs rather slender; tibiæ widest near the middle; tarsi short, stout, the first joint about as long as the next three.

This genus is closely allied to the preceding—*Eutylistus*—but is at once separable by its deeply incised eyes. The form is also more rotundate, becoming almost globose in the majority of species. The second joint of the antennal club, which, in *Eutylistus* and *Dorcatoma*, is more or less broadly triangular, is here much narrower and but feebly dilated apically. The small rounded prominence on the outer edge at the base of the first joint of the front tarsi feebly foreshadowed in *Dorcatoma*, and more distinct in *Eutylistus*, reaches here its greatest development. The lateral striæ of the elytra which exhibit considerable variability in *Eutylistus* are practically invariable in *Cœnocara*, and consist of two nearly complete outer striæ and a third inner basal stria which scarcely reaches the middle.

Owing to the almost complete fixity or uniformity in the more obvious external characters, the separation of species has proved more than ordinarily difficult and has required an amount of study entirely incommensurable with the importance of the genus as indicated by the number of species involved. Fortunately, well marked differences have been discovered in the form of the terminal joints of the palpi and in the sexual modifications of the eyes and antennæ, and by these the species may be distinguished with a fair degree of certainty. Once separated in this way, certain other more or less obvious differences appear, which are, however, rarely sufficiently pronounced in themselves to be relied upon. The surest means of separating the sexes lies in the form of the first joint of the antennal club. When both sexes are at hand this will be found to be invariably more strongly produced inwardly in the males, the form in the female being a slightly transverse isosceles triangle in all species. In a large majority of species the terminal joint is sexually modified but in a few species is not; the eyes are also larger and less deeply cleft in the male in about half the species, but in the others scarcely differ in the sexes. These variations were at first very puzzling, and to make sure that the sexes had been properly separated the genitalia were extracted in nearly all species. The male organs are moder-

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ately complex and exhibit differences of detail which are, perhaps, quite as significant, as Dr. Smith has shown them to be in *Lachnosterna*, I have, however, not attempted to investigate the matter thoroughly, as the use of these characters in such small insects would be quite impracticable. The species of this genus or at least some of them are known to pass the larval state in puff balls (*Lycoperdon*) The perfect insects are found for the most part on oak foliage. The following table will not be difficult to use with properly mounted specimens, i. e., with specimens in which the antennæ have been drawn out and the head raised so that the palpi may be seen, the accomplishment of which requires some little patience and delicacy of manipulation on the part of the student. The descriptions will be found for the most part very brief and consist largely of comparisons with the common *oculata*, with which most students are or may easily become familiar.

Punctures of upper surface sparse, those of the head and pronotum especially fine and remote; those of the elytra arranged in somewhat regular series .....1. **frontalis.**

Punctures of upper surface moderately numerous, those of the elytra not arranged in series.....2.

2. Pubescence relatively short and much inclined; antennal club in male blackish, in female pale.....2. **sycmnoides.**

Pubescence longer and erect; antennæ pale in both sexes .....3.

3. Eyes of male but little larger than in the female, deeply acutely incised, or nearly divided in both sexes.....4.

Eyes of male larger than in the female, the front (♂) narrower than the longest diameter of the eye.....7.

4. Form less broadly rotundate; sexual disparity in the eyes more evident; front in ♂ a little wider than the longest diameter of the eye. 3. **similis.**

Form very broadly rotundate, sexual disparity in the eyes feeble; front in ♂ about one-half wider than the longest diameter of the eye .....5.

5. Last joint of antennæ (♂) fully four times as long as wide and distinctly arcuate.....6.

Last joint of antennæ (♂) about three times as long as wide, not arcuate, but similar in the sexes .....4. **lateralis.**

6. Last joint of palpi broadly triangular, as wide as long, the apex squarely truncate; size large, punctuation rather sparse and coarse...5. **oculata.**

Last joint of palpi less broadly triangular, distinctly longer than wide, the apex obliquely truncate; size smaller, punctuation finer and closer.

Color black, pubescence luteous .....6. **blanchardi.**

Color brown or piceous brown, pubescence fulvous.....7. **californica.**

Last joint of palpi narrow, that of maxillary palpus subparallel and more than twice as long as wide.....8. **neomexicana.**

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7. Last antennal joint (♂) scimitar shaped, the tip acutely pointed; eyes cleft to the middle in the ♂, nearly divided in the ♀. Color black, head and prothorax dark rufous.....9. **bicolor.**
Last antennal joint (♂) arcuate, the tip rounded.....8.
Last antennal joint (♂) not arcuate, but of the ♀ type; last joint of maxillary palpus slender, subparallel, about two and one-half times as long as wide.....10. **tenuipalpa.**
8. Eyes (♂) cleft for fully three-fourths their length, form rotundate.
11. **inepta.**
Eyes (♂) cleft for barely two-thirds their length, form narrower.
12. **ovalis.**

1. **C. frontalis** n. sp.—Not very broadly oval; castaneous; pubescence sparse, erect, rather long, ochreous in color; punctuation everywhere fine and sparse; very remote on the head and pronotal disk; arranged in fairly regular series on the elytra. Terminal joint of maxillary palpi longer than wide, outer edge oblique; of labial palpi fully one-half longer than wide, transversely truncate and feebly sinuate at apex. First joint of antennal club (♀) nearly isosceles triangular and a little transverse. Eyes incised for two-thirds their length, the anterior portion relatively wider than in any other species. Front about one-third wider than the longest diameter of the eye, nearly flat, the epistomal suture and supra-antennal lines transformed into a broad deep groove, posteriorly flexed at its extremities. Ventral sutures not at all arcuate at middle; fifth ventral segment only about one-half longer than the fourth. Length 1.7 mm.

Described from a single example taken at Biscayne, Florida, by Hubbard and Schwarz.

This species is the most aberrant one of the genus, approaching *Eutylistus* in its more elongate form, sparser finer punctuation and serial arrangement of elytral punctures. It is therefore placed at the head of the genus. The type is apparently a female.

2. **C. scymnoides** Lec.—Form of *oculata;* black throughout, antennal club blackish or fuscous in the male, pale in the female. The pubescence is short, cinereous, strongly inclined and nearly uniform in direction, instead of confusedly bristling as in *oculata;* punctuation finer and denser than in *oculata.* Terminal joint of maxillary palpus slender, rather more than twice as long as wide, apex moderately oblique. Terminal joint of labial palpus broader but evidently longer than wide. Seventh joint of antennæ (♂) less strongly produced inwardly than in *oculata,* its width barely twice its length; eighth joint scarcely sinuate on its inner margin; ninth elongate-oval, not at all arcuate, about three times as long as wide, the apex obtusely rounded. Length 1.8-2.3 mm.

Hab.—Massachusetts (Tyngsboro, Blanchard); New York, New Jersey, Manitoba, Dakota, Montana, Colorado (Leavenworth Valley, Wickham); Nevada (Ulke collection).

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It is evident from the above localities that this species is distinctly a northern one. It is conspicuously different from all our other species in its subrecumbent or strongly inclined pubescence and black antennal club in the male.

3. **C. similis** Say.—A little less strongly rotundate than *oculata;* eyes in the male longer, incised for about three-fourths their length, the front not or but just visibly wider than the longest diameter of the eye; eyes in the female smaller and nearly divided, the front much wider, and nearly as in *oculata.* Sculpture, pubescence, antennal and palpal structure virtually as in *oculata.* Length 2.3–2.5 mm.

Hab.—Massachusetts (Tyngsboro); North Carolina (Black Mountains and Round Knob).

A single specimen from the former locality collected by Mr. Blanchard, and numerous examples from the latter taken by Dr. Van Dyke and Messrs. Hubbard and Schwarz. It is evident from Say's description that his type was a female, and it has been assumed that it was *oculata*, and so set down as a synonym by Le Conte. So far as his description goes he may have had either *oculata* or the present species before him, and since—judging from the material at hand—the present one is rather the more common of the two in North Carolina, I have chosen to use Say's name for it rather than coin a new one.

4. **C. lateralis** Lec.—Similar in form to *oculata*, but much smaller, and with grayer pubescence. Terminal joints of palpi not quite as broad as in *oculata;* last antennal joint about three times as long as wide, less acutely rounded at tip, not sinuate on its inner side, scarcely differing in the sexes. Seventh joint in the male less strongly produced than in *oculata.* The punctures of the ventral segments are much less numerous than in *oculata*, there being about three punctures in the segmental width here, to five in *oculata;* the head is more sparsely punctate than in *oculata.* Length 1.2–1.5 mm.

Hab.—Florida (Crescent City and Tampa, Hubbard and Schwarz collection); North Carolina (Bowditch collection).

The marginal stria of the lateral lobe of the elytra referred to by LeConte is purely imaginary.

5. **C. oculata** Say.—Rotundate-oval; strongly convex; polished; black, the head frequently rufous or rufescent, antennæ and legs, especially the four anterior ones, rufous or rufotestaceous; pubescence erect, ochreo-cinereous. Terminal joints of maxillary and labial palpi (figs. 3 and 4) broadly triangular, the former nearly as wide as long, the latter slightly transverse, the apex squarely truncate or very nearly so in both. Seventh joint of antennæ (♂) (fig. 1) as long as the five preceding, strongly acutely and somewhat sinuously produced

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inwardly, its width more than twice its length; eighth joint nearly as long as the width of the seventh, slightly increasing in width in basal third, then sinuately subparallel to apex, apical angle a little obtuse; ninth joint fully as long as the eighth but narrower, fully four times as long as wide, outer edge broadly arcuate, inner edge sinuate, tip moderately acute. In the female the seventh joint (fig. 2) is less than one-half wider than long and nearly of the form of an isosceles triangle; the eighth longer than the width of the seventh and scarcely sinuate internally; ninth relatively a little less elongate than in the male and not or only very feebly sinuate on its inner side. Eyes rather small, nearly divided, scarcely differing in the sexes; the front about one-half wider than their longest diameter. Head moderately closely punctate. Prothorax rather sparsely finely punctate at middle, the punctures becoming somewhat coarser and closer at sides, where they are separated by more than their own diameters. Elytral punctures coarser than those of the pronotum, irregularly placed with but faint evidences of serial arrangement, except between the lateral striæ, separated on the average by about twice their own diameters. Metasternum coarsely closely punctate; ventral segments closely but less coarsely punctate than the metasternum. Fifth segment as long as the two preceding united; the sutures slightly arcuate at middle. Length 1.75–2.25 mm.

Our commonest and most widely distributed species. The following localities are represented in the material at hand: All the New England States, New York, Pennsylvania, New Jersey, District of Columbia, North Carolina (Black Mountains), Ohio, Indiana, Illinois, Wisconsin, Michigan, Missouri, Kansas, Louisiana, Texas (Columbus), Arizona (Oracle and Santa Rita Mountains).

6. **C. blanchardi** n. sp.—Similar in form to *oculata*, but a little smaller and with finer closer punctuation. Pubescence yellowish gray. Terminal joint of maxillary palpus (fig. 6) about one-half longer than wide, the outer edge rather strongly oblique, the inner angle rounded. Terminal joint of labial palpus (fig. 7) fully one-half longer than wide, the outer edge moderately oblique. First joint of antennal club in the male (fig. 5) less produced inwardly than in *oculata*, its width barely twice its length; terminal joint a little sinuate on its inner side, making it appear somewhat arcuate, the apex pointed. Eyes widely separated, nearly divided, not differing appreciably in the sexes. Front vaguely longitudinally costate at middle. Length 1.5–2.1 mm.

Described from a series of five examples taken at Tyngsboro, Massachusetts, by Mr. Blanchard, to whom it gives me great pleasure to dedicate the species. With these I have placed a Michigan (Detroit) specimen in the Hubbard and Schwarz collection, which is quite surely identical, and a small series from Oregon (National Museum collection, Koebele). I am not entirely certain that these last are identical with the Massachusetts types, but can find no differences of moment. The Oregon examples have hitherto passed

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as *californica*, to which indeed they are very closely related, but the latter species is in my experience never truly black as is the present one, and the pubescence is more fulvous. The terminal joint of the antennæ in the female of *blanchardi* shows a slight tendency toward the form in the male by being slightly sinuate within, but this tendency, observable in the types, may not hold in larger series. The frontal costa is very vague, and is caused by the side slopes of the front meeting in a very obtuse and ill defined angle, which is usually marked by a narrow smooth line and only visible when viewed from the side. This frontal line is more or less evident in a number of species, but seems to be entirely wanting in *oculata*, *similis*, *lateralis*, *inepta* and *frontalis*.

7. **C. californica** Lec.—Form a little less broadly rotundate than in *oculata* and distinctly smaller; color varying from castaneous to piceous brown; pubescence fulvous. Palpi nearly as in *blanchardi*. Terminal joint of antennæ slightly sinuate on the inner side in the male; not sinuate, and relatively a little less elongate as usual in the female. Punctuation a little finer and closer than in *oculata*. Length 1.5–1.9 mm.

This species occurs on live oaks in California from the vicinity of San Francisco to San Diego. The species described above is that to which Casey gave the name *occidens*. He refers under his description to a black specimen with more densely punctate thorax from "Yountville, Napa Co," which he conceives to be the true *californica*. LeConte does use the term "black" in his description and speaks of the thorax as more densely punctured than in *oculata*. Mr. Blanchard writes me, however, that the type is somewhat brownish, and as there is some individual variation in the punctuation of the thorax in this species I have no doubt that LeConte's species is the one here described. I have seen nothing corresponding with Casey's Napa County black species, unless it be the Oregon form referred to under *blanchardi*. The thorax is not notably more densely punctate in that.

8. **C. neomexicana** n. sp.—Very similar to *oculata*, from which it differs as follows: Head very vaguely subcostate; punctuation of upper surface denser; terminal joints of palpi slender, that of the maxillary palpus more than twice as long as wide, and that of the labial palpus obviously longer than wide. Length 1.7–2.5 mm.

New Mexico (Las Vegas); Arizona (Williams and Oracle); collected by Barber and Schwarz.

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The very slender terminal joint of maxillary palpus occurs elsewhere only in *scymnoides* and *tenuipalpa*, the former at once separated by its regularly inclined pubescence, the latter by the larger less deeply incised eyes of the male.

9. **C. bicolor** Germ.—Form nearly as in *oculata*, size smaller, pubescence less distinctly yellowish. Color black, the head and prothorax dark rufous. Palpi as in *blanchardi* Seventh joint of antennæ (♂) (fig. 8) nearly as strongly produced as in *oculata*, the terminal joint scimitar shaped. In the female the seventh joint is subequilateral triangular, the terminal joint scarcely arcuate, but with the apex a little more pointed than in *oculata*. Eyes larger in the male, cleft only to the middle, the width of the front distinctly less than the longest diameter of the eye. In the female the eyes are smaller, widely separated and nearly divided, as in *oculata*. Front vaguely costate. Length 1.5–2 mm.

A somewhat widely dispersed species, as is evident from the following localities.

Massachusetts (Tyngsboro); New Jersey (Orange); Virginia (Ft. Monroe); Kentucky (Frankfort); Michigan (Detroit); Kansas; Nebraska; Texas (Columbus).

This species is readily distinguished from all others in our fauna by the falcate terminal joint of the antennæ in the male. The color is practically constant in all specimens seen.

10. **C. tenuipalpa** n. sp.—Similar in form, punctuation and pubescence to *oculata*, but somewhat smaller in size. Terminal joint of maxillary palpi (fig. 10) narrow, about two and one-half times as long as wide. Seventh antennal joint in the male (fig. 9) nearly as strongly produced as in *oculata*; the terminal joint scarcely three times as long as wide, not at all sinuate or arcuate, the apex bluntly rounded, the form nearly identical in the sexes. Eyes of male large, cleft only to the middle, the front narrower than their longest diameter. Eyes in the female smaller, widely separated and nearly divided. Front subcostate. Length 1.3–1.8 mm.

This is also a widely dispersed species, occurring from the New England States to Texas, and practically identical in distribution with *bicolor*. The following localities are represented: Massachusetts (Tyngsboro); District of Columbia; North Carolina (Highlands, Blanchard); Michigan (Detroit); Tennessee (Bowditch collection); Illinois (Monroe Co, Soltau); Texas (Belfrage collection).

The sexual disparity in the eyes, the slender palpi and the unmodified terminal joint of the male antennæ, form a combination of characters peculiar to this species.

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11. **C. inepta** n. sp.—So nearly identical in form, size, sculpture, etc., with *oculata* that it can only be distinguished from that species by the sexually modified eyes. These are obviously larger in the male, cleft for three-fourths their length, the front subequal to or a little narrower than their vertical diameter; smaller, widely distant and nearly divided in the female. The terminal joint of maxillary palpus is slightly narrower than in *oculata*, but the difference is not very conspicuous. The terminal joint of labial palpus and the antennal structure does not differ noticeably from *oculata*. Length 1.8–2.3 mm.

Hab.—New Jersey; Florida (Enterprise and Crescent City); Tennessee (Bowditch collection); Texas (Goliad, Schwarz).

12. **C. ovalis** n. sp.—Form more narrowly oval (less rotundate) than in any other species of the genus except *frontalis*. Eyes large in the male, cleft for two-thirds their length; front without trace of the median subcostiform elevation, about equal in width to the vertical diameter of the eye. Palpi not clearly visible, but with the terminal joints apparently nearly as in *oculata*. Antennæ (♂) as in *oculata*. Length 2.1 mm.

Described from a single male specimen collected by Hubbard and Schwarz in the Santa Rita Mountains of Arizona. The relatively elongate form combined with the ocular structure are sufficient to distinguish the species from any others at present known to us.

Ptilinini.

The rather striking resemblance which the species of *Ptilinus* bear to certain Bostrychide genera has led to the belief—at least among American entomologists—that they should be regarded as a transitional form between the Anobiinæ and the Bostrychidæ, and in the Classification by LeConte and Horn we find this genus together with *Euceratocerus* constituting a separate tribe—the Ptilinini—and placed at the end of the Anobiinæ. In this position they are made to follow the Dorcatomini, the members of which differ greatly from *Ptilinus* both in structure and appearance, and offer only another instance of the incongruous associations which arise from the necessity of arranging in linear sequence forms which have in their development radiated from a common center, or have diverged from a common stem.

There can be no doubt that *Ptilinus* is a true Anobiide, and it appears to me to be most closely allied to the central group—the Anobiini—from which it has diverged in about the same degree as have *Petalium* and *Eupactus*, and it is equally hard to place. The resemblance to the Bostrychidæ is largely superficial, consisting chiefly in bodily form, sculpture and the structure of the anterior

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tibiæ, and is, I am disposed to believe, due rather to similarity of habits and environment rather than to a community of origin. *Ptilinus* has, however, become so strongly individualized that it does not fit well anywhere in the series, and since similarity of habitus with the Bostrychides, whatever its origin, may fairly count for something, it has seemed best to leave the genus where it was placed by LeConte.

European systematists have not recognized in *Ptilinus* the type of a distinct tribe, the genus having long been assigned by them to the Xyletini, the genera of which, according to the system there in vogue, differ from the Anobiini in the three outer joints of the antennæ not being elongated. In view of the instability of antennal form in genera otherwise closely allied, this method of division seems to be an unfortunate one, and in this case brings together such discordant elements as *Trypopitys*, *Ptilinus* and *Lasioderma*.

The genus *Plumaria*, represented by a single species from the Caucasus, agrees with *Ptilinus* in the structure of the anterior tibiæ, in the general shape of the body, and in the disparity in form in the sexes, and should doubtless be associated with it wherever placed. *Euceratocerus*, associated by LeConte with *Ptilinus*, should not so stand, and has been removed (*vid. ante*) to the Anobiini. The antennæ are pectinate in the male in about the same degree as in *Ctenobium* and *Xeranobium*, and are not to be compared with the flabellate form prevailing in the male of *Ptilinus*. It should be remarked that the tabular character given in the Leconte and Horn Classification for the separation of the Ptilinini from the Anobiini, viz.: "Eyes distant from the prothorax" is fortuitous and totally unreliable. The principal characters of this tribe are given in the table on page 128, or will be found in the generic diagnosis below.

PTILINUS Geoffroy.

Mentum transversely subquadrate, very little narrowed anteriorly; terminal joints of both maxillary and labial palpi elongate-cylindrical, a little thickened before the base; penultimate joint of maxillary palpus short, moderately widened apically; of labial palpus elongate-clavate and a little arcuate; the palpi more hairy than usual. Antennæ 11-jointed, first joint moderately elongate and distinctly curved; second small, as wide as long; third elongate-cylindrical, with a basal process as long as the joint itself in the

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male, acutely triangular in the female; 4–10 strongly flabellate in the male, broadly serrate in the female; eleventh very elongate and similar to the branches of the preceding joints in the male, oval, not much longer than the tenth in the female. Eyes round, not large but strongly convex; front feebly margined over the antennæ, quite strongly impressed along the epistomal suture. Prothorax as wide as the elytra, varying more or less in form in the sexes; surface granulato-rugose in the male, distinctly asperate anteriorly in the female; side margin narrow, not visible from above; front margin more or less serrulate or crenulate in the female; front angles a little obtuse and well defined, hind angles rounded but somewhat defined. Scutellum subquadrate and a little elevated. Elytra usually confusedly punctate, rarely with the punctures arranged somewhat in lines. The head is rather strongly deflexed and not visible from above, but the prothorax is scarcely or only feebly excavated for its reception; prosternum moderate in length before the coxæ, which are nearly contiguous; middle coxæ very narrowly separated; mesosternum nearly horizontal; metasternum moderately long, not declivous in front, median line sulcate posteriorly, hind margin not notched at middle; episterna wide, parallel; hind coxal plates very narrow, not distinctly dilated internally. Ventral segments 1–4 nearly equal in length at middle, the fifth segment longer; first suture broadly posteriorly arcuate at middle. Legs moderate, front tibiæ finely subserrate externally, terminated by a strong horizontal apical tooth; middle tibiæ similarly but less conspicuously armed; tarsi as long as the tibiæ, first joint as long as the two or three following, second shorter and equal to the third and fourth united, the latter short; the fifth joint slightly elongate.

The form in this genus is more cylindrical than usual, and rather more markedly so in the female; the pubescence is very short, fine and appressed. In the female the fifth ventral segment is acutely transversely carinate before the apex in most species, and this structure is in some species more or less evident in the males.

I have not been able to identify Randall's *Tomicus thoracicus*, which subsequent authors have referred to this genus. The description* is very inadequate, but the "pitchy black" antennæ would

* "*Tomicus thoracicus*.—Body cylindrical, a little rough, black; antennæ pitchy black; thorax subglobose, indistinctly punctured; elytra punctured, hardly striate, although in some lights the distribution of the punctures gives somewhat that appearance; apex entire. Length $\frac{3}{20}$ in. Maine."

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exclude all the species of *Ptilinus* known to us except the Californian *ramicornis*, which Randall could by no possibility have found in Maine. In both the LeConte and Horn collections are specimens labeled *thoracicus*, and all have yellow antennæ. Those so named in the LeConte cabinet are probably the species here regarded as *pruinosus* Csy.; the Horn specimens are *lobatus* Csy., if I have properly interpreted the species.

The species known to me separate as follows:

Elytra feebly but regularly striate-punctate, antennal rami very slender and much longer than the prothorax .....6.

Elytra not at all striate, the punctures not serial in arrangement, except in ♀ of *acuminatus;* antennal rami never as long as the prothorax .....2.

2. Side margin of prothorax fine but well defined and even throughout, subapical transverse carina of last ventral segment distinct in both sexes...3.

Side margin of prothorax irregularly granulato-serrate, and not very well defined; subapical ventral carina nearly or entirely wanting in both sexes.....5.

3. Antennal rami longer, that of the third joint about twice the length of the joint, that of the fourth joint six or seven times the length of the joint (Eastern U. S.).....1. **ruficornis.**

Antennal rami shorter, that of the third joint subequal in length to the joint itself (Pacific Coast).....4.

4. Elytral punctuation confused and distinct from base to apex in both sexes; prothorax in the female sinuate at the sides subapically, the median lobe distinctly serrulate .....2. **basalis.**

Elytral punctuation subserial in arrangement in the male; very fine, and distinct only toward the base in the female; prothorax in the latter sex arcuately oblique subapically, the apex angulate and slightly prominent, not at all serrulate .....3. **acuminatus.**

5. Ramus of fourth antennal joint scarcely three times the length of the joint; prothorax subequal to the elytra in width.....4. **lobatus.**

Ramus of fourth joint nearly five times the length of the joint; prothorax a little narrower than the elytra.....5. **pruinosus.**

6. Prothorax broadly evenly arcuate at apex, feebly sinuate at middle, subapical ventral carina wanting in both sexes.....6. **ramicornis.**

1. **P. ruficornis** Say.—*Male.* Cylindrical, elytra not wider than the prothorax; black or piceous, opaque, antennæ and legs rufotestaceous, the thighs sometimes darker; pubescence exceedingly short, fine, and perfectly recumbent. Head evenly convex, moderately densely granulose; eyes separated by rather more than twice their longest diameter. Antennæ strongly flabellate, the ramus of the third joint about twice (more or less) as long as the joint; that of the fourth joint six or seven times as long as the joint. Prothorax slightly wider than long, widest before the base, sides broadly arcuate, apex narrower than the base; side margin very narrow, not obviously wider at the hind angles, scarcely at all serrulate, though sometimes a trifle irregular; hind angles rounded, front angles right, apical margin moderately strongly rounded, narrowly reflexed at

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the middle, with one or two serrules each side the median notch; surface finely and rather sparsely granulose at base, more coarsely so anteriorly, especially toward the middle; median line feebly finely impressed in anterior half, terminating at the basal margin in a feeble smooth prominence. Elytra a little more than twice as long as the prothorax and very slightly less than twice as long as wide; finely scabrous and dull, the punctures rather coarse and distinct throughout, separated on the average by about twice their own diameters, rarely with trace of serial arrangement, except near the side margin. Beneath more shining than above, punctures finer and denser, but varying in size; last ventral with subapical transverse ridge, which is less acute than in the female, but plainly obvious from a posterior view point.

Female.—Larger and usually paler than the male, the color varying from pale castaneous to piceous; eyes smaller and less convex, antennæ strongly serrate; asperities at the anterior portions of the thoracic disk more pronounced than in the male; the sculpture otherwise feebler, the surface throughout less dull, the prothorax posteriorly distinctly shining; median lobe of the apical margin of the prothorax sinuate each side, and more narrowly rounded, with several teeth each side the middle; subapical ventral carina strong. Length 2.8-4.8 mm.

Northern States from New England to Dakota. The following localities are represented in the material at hand: Massachusetts, New York, "Canada," Ontario (Ridgeway), Pennsylvania, West Virginia, Ohio, Michigan, Wisconsin, Iowa, Dakota.

2. **P. basalis** Lec.—*Male.* Dark brown or piceous, the elytra often much paler, legs and antennæ pale; pubescence yellowish, longer and denser than in *ruficornis*, quite conspicuous on the elytra. Head nearly as in *ruficornis*, antennæ (fig. 31) with much shorter rami, that of the third joint being subequal to the length of the joint itself, the ramus of the fourth joint three or four times the length of the joint. Prothorax opaque, somewhat transverse, sides convergent and but slightly arcuate from basal fourth, apex broadly rounded, the apical lobe ill defined, its reflexed margin with a narrow feeble median sinuation and scarcely at all serrulate; surface granulato-rugose, with larger asperities anteriorly; median line not impressed, a minute smooth prominence at the basal margin. Elytra scarcely wider than the prothorax, three-fourths longer than wide, finely scabrous, dull or very feebly shining, punctures irregularly disposed and nearly uniform in size throughout. Last ventral with distinct transverse subapical ridge.

Female.—Larger and rather more robust, color nearly uniform, varying from castaneous to piceous; sculpture finer and surface more shining; margin of prothorax slightly sinuate each side of the apical lobe, which is thus better defined, its margin distinctly serrulate each side of the deeper median notch; last ventral with acute transverse subapical carina. Length 3-5.5 mm.

California, San Diego to Mendocino.

In specimens from northern California the antennal rami are somewhat longer than in those from the south, but they are so closely in accord in other respects that I have not considered them distinct; there is also some variation in the coarseness of the elytral

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punctures, which, however, does not seem to depend on locality. *Flavipennis* Casey is evidently based on one of the extreme forms of this species with pale elytra. The variation from uniformly colored specimens is so gradual in a good series that this name cannot be given even varietal standing.

In the short review of the species of this genus given by Casey (Jour. N. Y. Ent. Soc., June, 1898) *basalis* is disposed of with the following brief characterization, which applies to the female: "Prothorax arcuately oblique subapically, the apex angulate and slightly prominent; elytra distinctly punctured only toward the base, the punctuation nearly obsolete toward the tip; thoracic lobe feebly and evenly crenulate." The principal character here given is the elytral punctuation. The description by LeConte does not hint at anything of the kind, nor do the types bear out the statement. Specimens of the species here regarded as *basalis* were sent to Mr. Blanchard, who, after comparing with the types at Cambridge, expressed himself as satisfied that they were identical. What Casey may have had in hand I cannot guess, as *acuminatus* Casey is the only species known to me having anything approaching the style of punctuation mentioned.

3. **P. acuminatus** Csy.—*Male.* Piceous, legs and antennæ paler; pubescence yellowish, rather dense on the elytra. Head evenly convex, minutely granulose; eyes prominent, separated by about twice their vertical diameter. Antennal rami moderate in length, that of the third joint subequal in length to the joint itself, the ramus of the fourth joint more than four times the length of the joint. Prothorax a little wider than long and equal in width to the elytra, widest just before the base, lateral margin very narrow but well defined and not at all serrulate or irregular; apical margin broadly rounded each side, the apex slightly angulate and minutely reflexed, without serrules; disk granulate and asperate as usual, median line scarcely visibly impressed. Elytra about three-fourths longer than wide, rather coarsely but sparsely nearly evenly punctate throughout, the punctures showing a tendency toward a serial arrangement. Last ventral with distinct subapical ridge.

Female.—Finely densely punctulate, surface scarcely rugose and more shining than in the male; apical margin of prothorax more distinctly ogival, acutely reflexed at middle, sides before the apex nearly straight and not at all serrulate; punctuation of elytra very fine, distinct only near the base. Subapical ventral carina long and acute. Length 2.5–4 mm.

California, Santa Cruz Mountains and vicinity of San Francisco.

Two males and six females are before me. The male described above was taken by myself in Marion County; it represents the smallest measurement given.

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4. **P. lobatus** Csy.—The following is Casey's description: "*Female.* Body rather stout, cylindrical, dark piceo-castaneous in color throughout, the legs scarcely, the antennæ much, paler; lustre rather dull, the pubescence very short and dense on the elytra. Head convex, minutely and densely granulate, the transverse frontal impression distinct. Prothorax distinctly wider than long, widest at about the middle, narrowed slightly to the base, rapidly and just visibly sinuate to the apical lobe; surface minutely and densely granulose toward base, more coarsely, sparsely and irregularly so toward apex, the median line finely impressed. Elytra three-fourths longer than wide, equal in width to the prothorax, minutely and densely subgranulose in texture, with the punctures rather strong, sparse and distinct, feebler toward tip, where they are more distinctly intermingled with small granules, and the ground lustre is more shining. Length 4 mm.; width 1.5 mm. Nebraska."

I have referred to this species a series of specimens from Missouri to New Mexico, females of which agree well enough with the above description, except that the pubescence cannot fairly be called "dense." As compared with females of *ruficornis* the surface sculpture is more rugose, the lustre duller, the elytral punctuation closer and coarser, the feeble elevated lines more obvious. The median lobe of the anterior thoracic margin is as stated by Casey more completely serrulate; the side margin of the prothorax is very feeble, not at all flattened, finely irregularly granulato serrate; the subapical ventral carina nearly obsolete. The male does not differ materially from the female in color, but is more opaque as usual; legs rufocastaneous, antennæ paler; the antennal rami much shorter than in *ruficornis*, that of the third joint not longer than the joint itself, that of the fourth joint scarcely three times as long as the joint. The prothorax is scarcely visibly narrower than the elytra, the anterior lobe serrulate throughout, but more finely and remotely so laterally; side margin as in the female. Elytra slightly less than twice as long as wide; last ventral without subapical carina.

The series at hand varies from 3–5 mm. in length, and bears the following locality labels: Missouri (Horn collection, where it bears label *P. thoracicus* Rand.). Salina, Kansas (Knaus); Nebraska (Nat. Mus. collection); Superior, Nebraska (Knaus); Happy Hollow and Ouray, Colorado (Wickham); Las Vegas, New Mexico—9600 feet (Cockerell).

5. **P. pruinosus** Csy.—*Male.* Black, opaque, antennæ pale rufous, femora and tibiæ piceous, tarsi pale. Differs from *ruficornis* as follows: Vertex obtusely carinate; antennal rami shorter, that of the third joint one-half longer than the joint itself; prothorax evidently a little narrower than the elytra, seven-tenths as wide as the latter behind the middle, side margin plainly serrulate through-

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out, median line finely feebly impressed throughout its length, small basal smooth prominence obsolete, surface a trifle more roughly granulate; elytra three-fourths longer than wide; last ventral without subapical transverse ridge.

Female. Not recognized. According to Casey "A little larger and paler than the male, with more shining elytra, upon which there are indistinct traces on each of three or four feeble ridges. Prothorax larger, fully as wide as the elytra, rounded at the sides, widest just behind the middle, the surface more sparsely and decidedly granose toward the tip. Elytra scarcely three-fifths longer than wide, twice as long as the prothorax. Length 3.-3.5 mm.

Indiana; Ontario (Ridgeway, Kilman).

Casey's types were from the former locality. The single male from Ontario which I have here referred and which has served for the above comparison with *ruficornis* may not be identical. It agrees fairly well in most respects with Casey's description, in which unfortunately the antennæ are not compared with those of *ruficornis*, nor is the presence or absence of the subapical ventral carina indicated. According to Casey's description "the feet are scarcely paler, the antennal rami infuscate, the elytra three-fifths longer than wide."

6. **P. ramicornis** Csy.—*Male.* Cylindrical, blackish, opaque, the elytra occasionally somewhat paler; legs pale, antennæ pale at base, the rami completely infuscate; pubescence yellowish, moderately developed. Head densely granulato-scabrous and opaque, epistomal impression strong. Antennal joints 4-10 very short, the rami excessively long and slender (fig. 30). Prothorax a little wider than long, subequal in width to the elytra, sides parallel and straight in basal three-fourths, the apex broadly evenly rounded, the reflexed border crenulate each side the small median sinuation; side margin very narrow, equally wide throughout and not at all serrulate; surface coarsely densely granulato-scabrous. Elytra very nearly twice as long as wide, finely scabrous, the punctures feeble and arranged in nearly even slightly impressed striæ.

Female.—Very similar to the male but more shining, the pronotal rugulosities sparser and nearly wanting toward the base, elytral declivity more flattened, with the intervals more uneven. Length 2.8-4 8 mm.

California, Santa Cruz Mountains, Pacific Grove (Fenyes), Pasadena, San Bernardino Mountains.

This is in several respects the most remarkable species in our fauna. The ramus of the third antennal joint is shorter than the joint itself, while the following rami are all longer than the prothorax, the longer ones being fully two-thirds the length of the elytra; they are also more slender and with longer pubescence than in any other species. The obtusely rounded anterior thoracic margin, and the elytral striæ are also peculiar to this species. The subapical ventral carina is lacking in both sexes.

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Bibliography and Synonomy.*

Family PTINIDÆ.

Subfamily I. PTININÆ.

Tribe I. GIBBIINI.

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scotias Fab. (Ptinus), Spec. Ins. i, p. 74 (1781); Syst. El. i, p. 327, Duval, Gen. Col. Eur. iii, t. 52, fig. 260.

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bicolor Dej. Cat. ed. 3, p. 130.
sulcatum Woll. non Fab. Ins. Mad. 273 (1854).

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Mulsant and Rey, Gibbicolles, p. 209, t. 13, figs. 4, 6, 8. 9.

2. PITNUS.

Gorham, Biol. Cent. Amer. Col. iii, pt. 2, p. 197 (July, 1883).

1. P. **pygmæus** Gorh. loc. cit. p. 198.

3. TRIGONOGENIUS.

Solier, Gay Hist d. Chile, Zool. iv, p. 464.

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2. N. **hololeucus** Fald. Fauna Ent. Trans. Cauc. 214, 197, t. 7, fig. 6.
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* Most of the European synonymy has been omitted as being irrelevant to American students, and for a like reason only so much of European bibliography is given in addition to original references, as will enable the student to locate some good subsequent description of figure.

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25. P. vegrandis n. sp.
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Subfamily II. ANOBIINÆ.

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4. OZOGNATHUS.

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pertinax Fab. Syst. El. i, p. 322.
domesticum [Fourer (Byrrhus)] Muls. and Rey, Téréd. p. 76, t. ii, fig. 10; t. iii, figs. 2, 5.—Kies. Naturg. d. Ins. Deutschl. v, Lief. i, Anobiadæ, p. 107.
pumilis Lec. (Hadrobregmus), Proc. Acad. Nat. Sci. Phila. 1865. p. 232.

14. HADROBREGMUS.

Thomson, Skand. Col. i, p. 89 (1859); v, p. 157.
Lec. Proc. Acad. Nat. Sci. Phila. 1865, p. 231.
Hemicælus Lec. Smith. Misc. Coll. iii, p. 204.
Cacotemnus Lec. loc. cit. p. 204.

1. H. defectus n. sp.
2. H. carinatus Say (Anobium), Jour. Acad. Nat. Sci. Phila. ii, p. 187; Ent. (ed. Lec.), ii, p. 120.
Lec. Proc Acad. Nat. Sci. Phila. 1865. p. 232.
Errans Melsh. (Anobium) Proc. Acad. Nat. Sci. Phila. ii, p. 309; Lec. loc. cit. p. 232.
3. H. linearis Lec. loc. cit. p. 232.
4. H. pusillus n. sp.
5. H. laticollis n. sp.
6. H. umbrosus n. sp.
7. H. gibbicollis Lec. (Anobium) Proc. Acad. Nat. Sci. Phila. 1859, p. 284.

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15. MICROBREGMA.

Seidlitz, Faun. Transylv. p. 537 (1891).

1. **M. emarginatum** Duft. Faun. Austr. iii, p. 54.
   Muls. and Rey (Anobium), Téréd. p. 98, t. 2, fig. 15; t. 3, fig. 8.—Thoms. (Anobium) Skand. Col. v, p. 164.
   foveatum Kirby (Anobium), Faun. Bor. Am. iv, p. 190.—Lec. (Hadrobregmus) Proc. Acad. Nat. Sci. Phila. 1865, p. 233.
   var. granicollis n. var.

16. CŒLOSTETHUS.

LeConte, Smith. Misc. Coll. iii, p. 204 (1861).
Dendrobium Muls. and Rey, Téréd. p. 78.

1. **C. notatus** Say (Anobium), Jour. Acad. Nat. Sci. Phila. v, p. 172 (1825); Ent. (ed. Lec.) ii, p. 281.
2. **C. americanus** n. sp.
3. **C. quadrulus** Lec. (Anobium) Proc. Acad. Nat. Sci. Phila. 1859, p. 87.
4. **C. alternatus** n. sp.
5. **C. truncatus** n. sp.

17. TRYPOPITYS.

Redtenbacher, Faun. Austr. Ed. ii, p. 562.
Lec. Proc. Acad. Nat. Sci. Phila. 1865, p. 234.

1. **T. sericeus** Say (Xyletinus), Jour. Acad. Nat. Sci. Phila. v, p. 172 (1825); Ent. (ed. Lec.), ii, p. 280.—Lec. loc. cit.
2. **T. punctatus** Lec. Smith. Cont. Knowl. ser. 2, xi, p. 13 (1859); loc. cit. p. 234.

18. COLPOSTERNUS new genus.

1. **C. tenuilineatus** Horn (Trypopitys), Proc. Cal. Ac. Sci. ser. 2, iv, p. 389 (1894).

Tribe IV. XYLETININI.

1. VRILLETTA.

LeConte, Trans. Am. Ent. Soc. 1874, p. 64.

1. **V. convexa** Lec. loc. cit. p. 65.
2. **V. murrayi** Lec. loc. cit. p. 64.
3. **V. blaisdelli** n. sp.
4. **V. expansa** Lec. loc. cit. p. 64.
5. **V. laurentina** n. sp.
6. **V. plumbea** n. sp.

2. EUVRILLETTA new genus.

1. **E. xyletinoides** n. sp.

3. XYLETOMERUS new genus.

1. **X. histricus** n. sp.

4. XYLETINUS.

Latreille, Gen. Crust. et Ins. iv, p. 376.
LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 237.

1. **X. distans** n. sp.
2. **X. pallidus** Lec. loc. cit. p. 237.

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3. **X. mucoreus** Lec. loc. cit. p. 237.
4. **X. peltatus** Harris (Anobium), Trans. Hartf. Nat. Hist. Soc. p. 75.
5. **X. harrisii** n. sp.
6. **X. fucatus** Lec. loc. cit. p. 238.
7. **X. pubescens** Lec. Proc. Am. Phil. Soc. xvii, p. 613 (1878).
8. **X. lugubris** Lec. loc. cit. p. 612.
9. **X. gracilipes** n. sp.

Unrecognized Species:

X. puberulus Boh. Kong. Svens. Freg. Eug. Res. ii, Zool. Ius. p. 86 (1859).

5. LASIODERMA.

Stephens, Illust. Brit. Ent. v, p. 417.
Lec. Proc. Acad. Nat. Sci. Phila. 1865, p. 238.

1. **L. dermestinum** Lec. loc. cit. p. 238.
2. **L. serricorne** Fab. (Ptinus) Ent. Syst. i, p. 241.—Muls. and Rey [Pseudochina (Hypora)], Térédiles, p. 307
   Ptilinus testaceus Duft., *Xyletinus testaceus* Sturm., etc., *Lasioderma serricorne* Lec. loc. cit.
3. **L. bicolor** n. sp.
4. **L. semirufus** n. sp.
5. **L. hemiptychoides** n. sp.

6. MEGORAMA new genus.

1. **M. simplex** Lec. (Catorama) Proc. Acad. Nat. Sci. Phila. 1865, p. 239.
2. **M. frontalis** Lec. (Catorama) Proc. Am. Phil. Soc. xvii, p. 410 (1878).
3. **M. viduum** n. sp.
4. **M. ingens** n. sp.

Tribe V. DORCATOMINI.

1. PETALIUM.

LeConte, Smith. Misc. Coll. iii, p. 204 (1861).
LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 234.
Rhadine Baudi, Berl. Ent. Zeit. 1873, p. 331.
Micranobium Gorh. (*in parte*) Biol. Cent. Amer. Col. pt. 2, July, 1883, p. 202.

1. **P. schwarzi** n. sp.
2. **P. yuccæ** n. sp.
3. **P. seriatum** n. sp.
4. **P. californicum** n. sp.
5. **P. bistriatum** Say, Jour. Acad. Nat. Sci. Phila. v, p. 172; ed. Lec. ii, p. 281.—Lec. Proc. Acad. Nat. Sci. Phila. 1865, p. 235.
   var. arizonense n. var.
   var. bicolor n. var.
   var. debile n. var.
6. **P. brunneum** Horn. Proc. Cal. Acad. Sci. 2nd ser. vi, p. 375 (1896).

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2. EUPACTUS.

LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 235.
Thaptor Gorh. Biol. Cent. Amer. Col. iii, pt. 2, 1883, p. 205.

1. **E. nactus** n. sp.
2. **E. advenus** n. sp.
3. **E. obsoletus** n. sp.
4. **E. amœnus** n. sp.
5. **E. mixtus** n. sp.
6. **E. nitidus** Lec. loc. cit. p. 236.
7. **E. canonicus** n. sp.
8. **E. similis** n. sp.
9. **E. punctulatus** Lec. loc. cit. p. 236.

Unrecognized Species.

E. pudicus Boh. (Anobium) Eugen. Resa. p. 86.

3. THECA.

Mulsant, Ann. Soc. Linn. Lyon, 1860, p. 293.
LeConte, Proc. Acad. Nat. Sci Phila. 1865, p. 235.
Stagetus Woll. Ann. Nat. Hist. 1861, p. 12.

1. **T. profunda** Lec. loc. cit.
striatopunctata Lec. Trans. Am. Ent. Soc. xii, p. 22 (1884).

4. CATORAMA.

Guerin, Rev. et Mag. d. Zool. 1850, p. 431.
LeConte, Proc. Acad. Nat. Sci. 1865, p. 238.
Hemiptychus Lec. loc. cit. p. 239.

1. **C. punctulatum** Lec. Proc. Am. Phil. Soc. xvii, p. 409 (1878).
2. **C. vitiosum** n. sp.
3. **C. impressifrons** n. sp.
4. **C. sectans** Lec. loc. cit. p. 410.
5. **C. mutans** n. sp.
6. **C. estriatum** Horn (Hemiptychus), Proc. Cal. Acad. 2d ser. iv, p. 390 (1894).
7. **C. grande** n. sp.
8. **C. lentum** n. sp.
9. **C. conophilum** n. sp.
10. **C. latum** Horn (Hemiptychus), loc. cit. p. 391; *obsoletus* Lec. || loc. cit. p. 410.
11. **C. simplex** n. sp.
12. **C. metasternale** n. sp.
13. **C. inæquale** n. sp.
14. **C. abbreviatum** Lec. (Hemiptychus) loc. cit. p. 408.
15. **C. gibbulum** n. sp.
16. **C. carinatum** n. sp.
17. **C. ventrale** Lec. (Hemiptychus) loc. cit. p. 240.
18. **C. punctatum** Lec. (Hemiptychus) loc. cit. p. 240.
19. **C. densum** n. sp.
20. **C. dichroum** n. sp.
21. **C. nigripenne** n. sp.

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22. C. dispar n. sp.
23. C. nigritulum Lec. (Hemiptychus) loc. cit. p. 241.
24. C. vestitum n. sp.
25. C. palliatum Fall (Hemiptychus) Occas. Pap. Cal. Acad. Sci. viii, p. 253 (1901).
26. C. placidum n. sp.
27. C. debile Lec. (Hemiptychus) loc. cit. p. 408.
28. C. posticum n. sp.
29. C. tumidum n. sp.
30. C. nubilum n. sp.
31. C. longulum n. sp.
32. C. uniforme n. sp.
33. C. fastigiatum n. sp.
34. C. otiosum n. sp.
35. C. congruum n. sp.
36. C. vexatum n. sp.
37. C. robustum Horn (Hemiptychus) Proc. Cal. Acad. Sci. 2d ser. iv, p. 393.
38. C. grave Lec. (Dorcatoma) Proc. Acad. Nat. Sci. Phila. 1858, p. 72; ibid. 1865, p. 240.
39. C. porosum n. sp.
40. C. convexum n. sp.
41. C. castaneum Ham. (Hemiptychus) Can. Ent. 1893, p. 307.
42. C. politum n. sp.
43. C. triviale n. sp.
44. C. conjunctum n. sp.
45. C. boreale Lec. (Hemiptychus) loc. cit. p. 240.
46. C. pusillum Lec. (Dorcatoma) Proc. Acad. Nat. Sci. Phila. 1858, p. 72; ibid. 1865, p. 240.
47. C. consobrinum n. sp.
48. C. simile Lec. (Hemiptychus) loc. cit. p. 408.
49. C. pingue n. sp.
50. C. vacuum n. sp.
51. C. cicatricosum n. sp.
52. C. luteotectum Fall (Hemiptychus) Oc. Pap. Cal. Acad. Sci. viii, p. 253.
53. C. geminatum n. sp.
54. C. gracile n. sp.
55. C. mancum n. sp.
56. C. validum n. sp.
57. C. confusum n. sp.
58. C. angustum n. sp.
59. C. parvum n. sp.
60. C. turbidum n. sp.
61. C. auctum Lec. (Hemiptychus) loc. cit. p. 409.
62. C. indistinctum n. sp.
63. C. exiguum n. sp.
64. C. obsoletum Lec. (Hemiptychus) loc. cit. p. 240.

5. **CRYPTORAMA** new genus.

1. C. oblongum n. sp.
2. C. vorticale n. sp.
3. C. minutum Lec. (Catorama) Proc. Am. Phil. Soc. Phila. xvii, p. 409.
4. C. holosericeum Lec. (Catorama) ibid.

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6. STICHTOPTYCHUS new genus.

1. S. agonus n. sp.

7. PROTHECA.

LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 241.

1. P. hispida Lec. loc. cit.
2. P. puberula Lec. ibid.

8. DORCATOMA.

Herbst, Käfer. iv, p. 103.
LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 242.

1. D. dresdensis Herbst. loc. cit. p. 104, t. 39, fig. 8.—Muls. and Rey, Téréd. p. 342, t. x, figs. 2, 4, 8, 14.
   pallicornis Lec. Proc. Bost. Soc. Nat. Hist. (1874), xvi, p. 274.
2. D. integer Fall (Hemiptychus) Oc. Pap. Cal. Acad. Sci. viii, p. 253 (1901).
3. D. setulosum Lec. loc. cit. p. 242.

9. BYRRHODES.

LeConte, Proc. Am. Phil. Soc. 1878, xvii, p. 412.

1. B. setosus Lec. loc. cit. p. 413.

10. EUTYLISTUS new genus.

1. E. intermedius Lec. (Cænocara) Proc. Am. Phil. Soc. 1878, xvii, p. 411.
2. E. incomptus Lec. (Dorcatoma) Proc. Acad. Nat. Sci. Phila. 1865, p. 243.
3. E. tristriatus Lec. (Dorcatoma) loc. cit. p. 411.
4. E. ulkei n. sp.
5. E. levisternus n. sp.
6. E. granus Lec. (Dorcatoma) loc. cit p. 411.
7. E. fallax n. sp.
8. E. facilis n. sp.

11. CÆNOCARA.

Thomson, Skand. Col. i, p. 90 (1859); v, p. 174.
LeConte, Proc. Acad. Nat. Sci. Phila. 1865, p. 243.
LeConte, Proc. Am. Phil. Soc. Soc. 1878, p. 412 (table of species).
Tylistus Lec. Smith. Misc. Coll. iii, 1861, p. 203.
Enneatoma Muls. and Rey, Téréd. p. 367 (1863).

1. C. frontalis n. sp.
2. C. scymnoides Lec. loc. cit. p. 244.
3. C. similis Say (Dorcatoma) Bost. Jour. Nat. Hist. i, p. 166 (1835); Ent. (ed. Lec.) ii, p. 642.
4. C. lateralis Lec. loc. cit. p. 411.
5. C. oculata Say (Dorcatoma) Long's Exped. St. Peters. ii, p. 273 (1824); Ent. (ed. Lec.) i, p. 180.
6. C. blanchardi n. sp.
7. C. californica Lec. loc. cit. p. 412.
   occidens Casey, Bull. Cal. Acad. Sci. 1885, p. 330.
8. C. neomexicana n. sp.
9. C. bicolor Germ. Ins. Nov. p. 79.
10. C. tenuipalpa n. sp.
11. C. inepta n. sp.
12. C. ovalis n. sp.

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Tribe VI. PTILININI.

1. PTILINUS.

Geoffroy, Hist. de Ins. de Env. de Paris, i, p. 64.
Casey, Jour. N. Y. Ent. Soc. vi (June, 1898), p. 62.

1. P. ruficornis Say Jour. Acad. Nat. Sci. Phila. iii (1823), p. 186.
   (?) *bicolor* Mels. Proc. Acad. Nat. Sci. Phila. ii, p. 308.
2. P. basalis Lec. Proc. Acad. Nat. Sci. Phila. 1858, p. 73.
   flavipennis Csy. loc. cit. p. 63.
3. P. acuminatus Csy., loc. cit. p. 63.
4. P. lobatus Csy., loc. cit. p. 62.
5. P. pruinosus Csy. loc. cit. p. 63.
6. P. ramicornis Csy. loc. cit. p. 63.

EXPLANATION OF PLATE VII.

Fig. 1. *Cænocara oculata* ♂, antenna.
" 2. " " ♀, "
" 3. " " terminal joint of maxillary palpus.
" 4. " " " " labial palpus.
" 5. " *blanchardi* ♂, antenna.
" 6. " " terminal joint of maxillary palpus.
" 7. " " " " labial palpus.
" 8. " *bicolor* ♂, antenna.
" 9. " *tenuipalpa* ♂, antenna.
" 10. " " terminal joint of maxillary palpus.
" 11. " " " " labial palpus.
" 12. *Vrilletta convexa* ♂, antenna.
" 13. " *murrayi* ♂, "
" 14. " *plumbea* ♀. "
" 15. " *laurentina* ♀, "
" 16. *Euvrilletta xyletinoides* "
" 17. *Xyletomerus histricus* "
" 18. *Xestobium rufovillosum* "
" 19. " *affine* "
" 20. *Utobium elegans* "
" 21. *Xeranobium macrum* "
" 22. " *desertum* "
" 23. " *laticeps* "
" 24. " *cinereum* "
" 25. *Oligomerodes occidentalis* antenna.
" 26. " *catalinæ* ♂, "
" 27. " " ♀, "
" 28. *Actenobius pleuralis* "
" 29. *Euceratocerus hornii*, ♂, "
" 30. *Ptilinus ramicornis* ♂, "
" 31. " *basalis* ♂, "
" 32. *Eutylistus granus*, metasternal lobe.
" 33. " *fallax* " "
" 34. " *facilis* " "

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ERRATA.

Page	103,	line	10	from top,	for fine *read* five.
"	112,	"	7	" "	for aciculate *read* acuminate.
"	125,	"	5	" "	omit to.
"	125,	"	4	" bottom,	for **V** *read* **P**.
"	133,	"	16	" top,	for revirsion *read* revision.
"	153,	"	5	" "	for scabrous, punctate *read* scabrous-punctate.
"	157,	"	16	" "	for *Actenobium* read *Actenobius*.
"	180,	"	8	" bottom,	add quotation marks (") *after* commentators.
"	189,	"	6	" "	for deeper *read* deep.
"	194,	"	12	" "	for Makelumne *read* Mokelumne.
"	203,	"	3	" "	for mediangular *read* median gular.
"	204,	"	8	" top,	for posteriorly *read* exteriorly.
"	250,	"	21	" bottom,	omit less.
"	256,	"	1	at bottom,	for *punctulatum* read *punctatum*.

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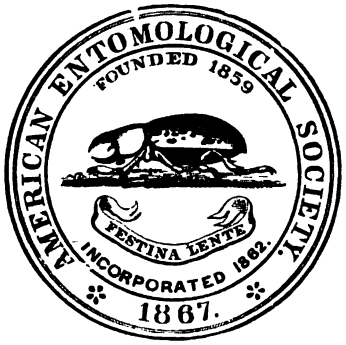

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A Revision of the Mouth-parts of the CORRODENTIA and the MALLOPHAGA.

BY ROBERT E. SNODGRASS.

(With Plate VIII.)

I. *Introduction.*

The conclusion reached by the writer through a study of the material described in this paper is that the mouth-parts of the Corrodentia and the Mallophaga are morphologically identical in structure. Furthermore, it will be seen by anyone acquainted with the mouth-parts of biting insects in general that the two groups possess several highly specialized mouth structures that are peculiar to them. It is, thus, evident that the two orders are at least more nearly related to each other than to any other order of insects.

On account of the usual small size of the Corrodentia and the Mallophaga and the consequent difficulty in making dissections the mouth-parts of the two groups have been given various interpretations. The writer, however, has had the fortune to obtain through Professor V L. Kellogg specimens of two unusually large Mallophagan species, viz.: *Ancistrona gigas* Piaget and *Lœmobothrium gypsis* Kellogg, the latter a giant among bird lice measuring nearly 11 mm. in length. These two species are described and figured in this paper.

The writer is indebted to Mr. Nathan Banks for the identification of Corrodentian specimens.

The variety of opinion that has been published concerning the mouth-parts of the two orders in question can probably be best illustrated by a brief historical resumé. The number given in parentheses after an author's name refers to the number of the paper given in the bibliographical list.

The earlier entomologists of course confused the Mallophaga with the blood-sucking or true lice, but since the beginning of last century it has been known that they have biting mouth-parts and that they feed on the feathers or hairs of their hostes.

Nitzsch (1) in 1818 published the first account of the Mallophagan mouth-parts and described them correctly. He recognized the biting mandibles, he ascribed the palpi of the suborder Amblycera

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to the maxillæ, and he described the labium as having small 1- or 2-jointed palpi. He did not, however, mention the œsophageal sclerite and lingual glands of the Ischnocera, nor did he perceive the maxillary forks which are present at least in some forms.

In 1870 Rudow (2) published detailed accounts of the mouth-parts of a large number of Mallophagan species. He makes, however, the curious and unaccountable error of ascribing to Ischnoceran forms a 5–8-segmented maxillary palpus and a 3 segmented labial palpus, and to Amblyceran forms a 5-segmented maxillary palpus and a 4-segmented labial palpus. One would suppose he had taken the antennæ for palpi, but the antennæ he describes also.

Giebel (3) in 1874, following Nitzsch's work, gives correct descriptions and figures of the mandibles, maxillæ and labium, showing the 4-jointed palpi of the Amblycera as appendages of the maxillæ.

In 1878 Burgess (4) gave the first good account of the Corrodentian mouth-parts. He described the large biting mandibles, the maxillæ bearing each a 4-segmented palpus and one weakly developed apical lobe, and the simple labium with small 1-segmented palpi. Furthermore, he described and figured the curious œsophageal sclerite (or "œsophageal bone"), the lingual glands and the maxillary forks. The latter he called simply the "forks" and regarded them as morphologically independent of the maxillæ. He described the muscles connecting them with the stipes and apical lobe of the maxilla, and an "elastic ligament" extending from the inner end of each to the wall of the head.

In 1885 Grosse (5) published a new opinion concerning the palpi of Mallophagan suborder Amblycera. He states that in dissections of the mouth parts the palpi always come away from the head with the labium. He consequently regarded them as labial palpi, and gives figures of the labium of two species, each bearing a pair of 4-jointed palpi. He of course, therefore, described the maxillæ as being always small and weakly developed and as never possessing palpi.

In 1887 Packard (6) made the first intelligent comparison between the Mallophaga and the Corrodentia. He based his comparisons on the anatomical work of Burgess and Grosse. But, since Grosse described the labium of the Mallophaga as bearing palpi and the maxillæ as lacking them, and since the œsophageal sclerite, lin-

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gual glands and the maxillary forks were then known only in the Corrodentia, the similarity which Packard was able to point out between the two orders was not nearly as great as can be demonstrated at the present time.

Kellogg (7) in 1896 adopted Grosse's view of the mouth-parts.

In 1896 the present writer (8) prepared an account of the mouth-parts of two Amblyceran and two Ischnoceran species of the Mallophaga. It was found that the palpi of the Amblycera, as was stated by Grosse, come away from the head in dissections attached to the labium, and that in cleared specimens they appear to be attached to the corners of the labium. On this account the mouth-parts were given the same interpretation as had been given them by Grosse. In this paper, however, was given the first description of the œsophageal sclerite, the lingual glands and the maxillary forks in the Mallophaga. Kellogg (9) in the same paper was then able to carry the comparison between the two orders, Mallophaga and Corrodentia, much farther than Packard had done. The œsophageal sclerite is usually a conspicuous object near the centre of the head in cleared specimens on account of its dark brown color and its shield-like shape. For this reason it has been figured by nearly all systematic writers on the Mallophaga, but apparently its true nature had never before been understood, some authors referring to it as the "labium." In 1899 the writer (9) repeated the descriptions of the Malloghagan mouth parts and gave observations on the distribution of the œsophageal sclerite in the two suborders Amblycera and Ischnocera.

Ribaga (11) in 1901 gave a good description of the Corrodentian mouth parts. The maxillary rod he calls the styliform apophysis (*apofisi stiliforme*), and regards it as morphologically distinct from the maxilla.

Finally in 1903 Enderlein (13) discusses the Corrodentian mouth-parts and compares them with the mouth parts of the Mallophaga. He regards the palpi of the Amblycera as belonging to the maxillæ, but does not admit any correspondence between the mouth parts of the two orders. The maxillary rod he describes as the inner lobe, *i. e.*, lacinia of the maxilla. To the organs called "lingual glands" by Burgess, he gives the following very curious interpretation: The hypopharynx or "endolabium" is described as consisting of a median lobe or "glossa" (the hypopharynx proper), and of two lat-

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eral parts, the "paraglossæ" ("morphologically a third pair of maxillæ"). Then he farther states that the paraglossæ are the organs that Burgess called the "lingual glands." The ducts from the latter are described as chitinous bands, which unite in the lower wall of the œsophagus. He must have simply looked through the head of cleared specimens and supposed that the lingual glands were free lobes lying above the labium, whereas they really lie within the head cavity.

In the present paper anatomical preparations are described and figured that show definitely that in both the Mallophaga and the Corrodentia the palpi, when present, belong to the maxillæ, and that the maxillary forks are independent structures having no relation to the maxillæ, except that of proximity and muscular attachment.

II. *The Mouth-parts of the Corrodentia.*

The mandibles (figs. 13 and 14) are of the ordinary, strong, heavy, biting type. They are usually two toothed and have a large lobe projecting mesad from the inner basal angle. In all species examined they lie in a horizontal plane, parallel with the head, as in the suborder Amblycera of the Mallophaga.

The maxillæ (figs. 10 and 12) consist each of a body piece (*mx.*), probably representing the stipes or stipes and cards, of a 4 jointed palpus (*pl.*), with sometimes a palpifer (*plf.*, fig. 10), and of one weakly chitinized terminal lobe (*l.*). This lobe is regarded by Enderlein (13, 14) as the outer lobe or galea of the maxilla—the furca maxillaris being regarded as the inner lobe or lacinia.

Figure 12 shows sufficiently the shape of the maxilla of *Troctes divinatorius*, and figure 10 that of *Peripsocus californicus*. In the former the stipes (*mx.*) is a long club-shaped plate lying at the side of the labium, much as does the stipes of the Mallophagan maxilla. In *Peripsocus californicus* the stipes (*mx.*) is a small ovate plate. The palpus is 4-jointed in each species; in *T. divinatorius* it is born directly by the stipes; in *P. californicus* it is supported on a palpifer (fig. 10, *plf.*). The terminal lobe (*l.*) is in each case simple and weakly chitinized.

The labium (figs. 9 and 11) consist of a large submentum and of a mentum bearing a pair of usually 1-segmented palpi and one pair of terminal lobes. According to Enderlein (13, 14) the palpi are sometimes 2 jointed. Enderlein describes also an "endolabium"

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corresponding with the endolabium of the Colembolla, but what he thus refers to are the organs described by Burgess (4) as the "lingual glands," and which are described under the latter name in this paper.

The furcæ maxillares or maxillary forks (fig. 12, *f*, and fig. 15) are organs as yet discovered only in the Corrodentia and the Mallophaga. From their anatomy it would appear improbable that they have any morphological relation with the maxillæ, but on account of their close proximity to, and muscular connection with, the latter the name of maxillary forks may be appropriately given to them. Westwood referred to them as the "horny processes," and Burgess (4) described them as simply the "forks."

The organs in question are two chitinous rods protruding into the mouth from below the inner edges of the bases of the maxillary lobes. Each extends from the latter point into the head-cavity, posteriorly and slightly outward, dorsal to the stipes and about a third of its length beyond the latter (fig 12, *f.*). The free tip is usually bifid (whence the name fork), but may present three or four terminal points (fig. 15). The part within the head is imbedded in a sheath of protractor muscles (fig. 12, *p. m.*), whose origin is upon the dorsal face of the stipes. The posterior tip is attached by two bands of retractor muscles (fig. 12, *r. m.*) to the posterior wall of the head. Burgess (4) describes these retractors as elastic ligaments and not as muscles, but they certainly have the appearance of muscles in the preparation from which figure 12 was drawn.

Enderlein (13, 14), as has already been stated, regards these maxillary forks as the inner lobes or laciniæ of the maxillæ. Burgess (4) and Ribaga (11) regard them as independent organs since they have no articulation of any sort with the maxillæ, being connected with the latter simply by the protractor muscles. Their actual origin has never been investigated. If they are, as they appear to be, independent organs, then the part of each within the head is to be regarded as simply an apodeme of the free rod projecting into the mouth. The rods may, hence, be simply hypopharynged structures. They are termed the "apofisi stiliforme" by Ribaga (11).

The œsophageal sclerite and lingual glands (fig. 16) are curious organs described in the Corrodentia by Burgess (4). The œsopha-

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geal sclerite is a thick, densely chitinized, cup shaped sclerite located in the ventral wall of the œsophagus a short distance back of the mouth opening. The cavity makes a depression in the floor of the œsophagus, and the sclerite is probably simply a thickening of the œsophageal intima. Its shape varies in different species, but viewed from above or below it is usually shield-shaped or oval, with two elongate anterior arms and a small median posterior projection. In *Peripsocus californicus* (fig. 16, *œ. scl.*) the anterior arms are short, but there are two wide, expanded, plate-like arms projecting posteriorly and outward.

From the anterior end of the cavity of the sclerite a duct extends forward, which soon divides into two. These ducts (fig. 16, *d.*) continue anteriorly within the hypopharynx and then diverge outward and turn posteriorly to become attached to the lingual glands (*gl.*) whose outer edges they traverse. The lingual glands are oval or elongate-oval organs, with a thick chitinous lining, lying within the base of the hypopharynx. They are the structures called by Enderlein (13, 14) the "paraglossæ" of the "endolabium." Each gland is supported on a chitinous peduncle (fig. 16, *ped.*), which projects posteriorly toward the caudal wall of the head to which it is connected by means of muscles.

III. *The Mouth-parts of the Mallophaga.*

The mandibles (figs. 4 and 8) are always large and strongly chitinized. In the Amblycera they are horizontal and parallel with the head; in the Ischnocera they hand downward sometimes perpendicular to the plane of the head. They are nearly always two-toothed distally and usually have some sort of mesad projection from the inner angle of the base.

The maxillæ (figs. 2 and 5) consist each of a rather large basal piece (*mx.*) representing the stipes or stipes and cards, which is always fused with the lateral edge of the labium, of a simple, small apical lobe, and in the Amblycera of a 4 segmented palpus. On account of the union between the stipes and the adjacent edge of the labium the palpi have the appearance of belonging to the labium, and when the mouth-parts are dissected away from the head the labium, stipes and palpi generally come off together. On account of this the labium has been described by Grosse (5), and the present writer (8 and 10) as possessing two 4-jointed palpi in

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the Amblycera, while the maxilla was regarded as consisting of only the small terminal lobe However, a closer examination of *Ancistrona gigas* shows a distinct line on each side separating the stipes from the labium (fig. 5), while in the very large *Lœmobothrium gypsis* it is easy to dissect the stipes off from the head and free from the labium, and attached to it, are also removed the palpus (fig. 2, *pl.*) and the single apical maxillary lobe (*l.*). Hence, we will have to admit that the original description of the mouth parts by Nitzsch is most probably the correct interpretation. The apical lobe of the maxilla is always small and inconspicuous, it is often soft and fleshy (fig. 5, *l.*), but may be more or less chitinized and bear a row of teeth distally (fig. 2, *l.*).

In the Ischnocera the maxillæ never have any trace of palpi, but otherwise are like those of the Amblycera.

The labium (figs. 1 and 5, *lab.*) is large and is usually composed of a mentum and a submentum. The distal edge of the mentum is produced into several small lobes of which the outer ones are regarded by most authors as the rudimentary labial palpi. They vary much in shape and size in the Amblycera where the maxillary palpi are present, being sometimes inconspicuous as in *Ancistrona gigas* (fig. 5), or comparatively large articulated lobes as in *Lœmobothrium gypsis* (fig. 1, *pl.*). In the Ischnocera they are always cylindrical in shape, and, although short, project prominently from the mentum. The margin of the labium between the palpi is sometimes entire (fig. 1, *lab.*), but is more frequently produced into two or more lobes. A pair of large, thick, biramous processes arises from the submentum of *Ancistrona gigas* and projects backward (not shown in figure).

The furcæ maxillares (fig. 1, *f.* and fig. 7) have been discovered by the writer in three Mallophagan species, viz.: *Goniodes cervinicornis*, *Ancistrona gigas* and *Lœmobothrium gypsis*. Since, however, they are extremely small, the fact that they have not been found in other species does not prove their absence in them. These maxillary forks are two delicate bars of chitin embedded in the floor of the mouth. Their distal ends project free into the mouth cavity beyond the edge of the labium and above the hypopharynx (fig. 1, *f.*). The tip of each is bifid in *Ancistrona gigas* (fig. 7) and divided into three small lobes in *Lœmobothrium gypsis* (fig. 1, *f.*).

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Near the middle are inserted several protractor muscles fig. 7, *p. m.*), which are attached to the maxilla. On the posterior end are inserted the retractor muscles (*r. m.*) whose origin is on the wall of the head.

The œsophageal sclerite and lingual glands (fig. 3) occur in typical form in nearly all the Ischnocera, but are absent in most of the Amblycera. In the latter group they are present in probably all the species of *Colpocephalum*, in most species of *Menopon* and in *Lœmobothrium gypsis*, but in these forms the sclerite does not have the shape characteristic of it in the Ischnocera. In two previous papers (8 and 10) the writer has given detailed descriptions of these organs in several species.

In the Ischnocera the œsophageal sclerite is nearly always of a shield-shaped form when viewed from above or below, is very convex ventrally, has two wide antero-lateral arms and a small median posterior lobe, and has a chitinous band extending from each lateral dorsal rim upwards toward the roof of the head. From its anterior end a rather long duct runs forward which divides and goes posteriorly to the lingual glands, which latter do not differ from those of the Corrodentia.

The sclerite is a thickening of the intima of the œsophagus and is not a hypopharynx in the sense in which this term is used in insect anatomy. The true *pharynx* of insects is of course the anterior end of the œsophagus, but the word "hypopharynx" refers to the median lobe developed above the base of the labium in the cavity between the mouth parts, which is outside of the true mouth located in the peristomal membrane.

In those species of the Amblycera that possess an œsophageal sclerite, the anterior arms of the latter are usually greatly elongate and frequently there are postero-lateral lobes present. The body of the sclerite is also relatively smaller and usually of an oval outline, rather than shield shaped. Such a sclerite is shown in figure 3 (*œ. scl.*), representing in ventral view that of *Lœmobothrium gypsis*. In this species the anterior arms are long thin plates slightly expanding at the anterior ends. The lingual glands are proportionately small and are ovate in shape. (The left gland is removed to show the anterior end of the left arm of the sclerite).

The histology of the œsophageal sclerite and the lingual glands has never been investigated, and their function is yet to be explained.

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A hypopharynx and an epipharynx are usually not conspicuously developed in the Mallophaga. In *Lœmobothrium gypsis*, however, there is a large and complicated hypopharynx projecting above the labium (fig. 1, *hyp.*). It consists of six lobes, of which two are large, wide and median, two are lateral and more elongate, and the other two are club-shaped and are situated between the middle and outer one on each side.

Ancistrona gigas possesses a bilobed epipharynx supported internally by a minute rod,* bifid at each end (fig. 6). The anterior prongs of the rod lie in the two lobes of the epipharynx, while the rest of the rod and the two large posterior arms are imbedded in the roof of the mouth.

IV. *Conclusions.*

1. The *mandibles* of the Corrodentia and the Mallophaga are practically identical.

2. The *maxillæ* of the Corrodentia consist always of a stipes, a 4-jointed palpus and of one apical lobe; in the Mallophaga the suborder Amblycera have maxillæ identical in structure with those of the Corrodentia, but the Ischnocera lack maxillary palpi.

3. The *labium* is similar in the two orders, the palpi being rudimentary in each, being 1-jointed, except in a few Corrodentia where they are 2-jointed. The distal edge of the labium is generally lobed, but is entire in some Mallophaga.

4. The *furcæ maxillares* are identical in the two orders. Although they have been discovered in only a few Mallophagan species, this does not prove that they are not present in others. They are probably structures developed independently of the maxillæ.

5. The *œsophageal sclerite* and *lingual glands* are identical in the two orders. They are present in all the Corrodentia, and in the Mallophagan suborder Ischnocera and in many members of the Amblycera. The sclerite is a thickening of the intima of the floor of the œsophagus; the glands lie in the head between the œsophagus and the submentum.

* By a mistake the writer (8 and 10) first described this rod in *Ancistrona gigas* as a hypopharynx.

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EXPLANATION OF PLATE VIII.

(CAMERA LUCIDA DRAWINGS.)

Fig. 1. *Læmobothrium gypsis* Kell.—Labium (*lab.*) with maxillary forks (*f.*) and hypopharynx (*hyp.*) projecting above it; *pl.*, labial palpus.

Fig. 2. *Læmobothrium gypsis* Kell.—Maxilla; *l.* apical maxillary lobe; *mx.* body of maxilla (stipes); *pl.* maxillary palpus.

Fig. 3. *Læmobothrium gypsis* Kell.—Oesophageal sclerite (*œ. scl.*) and lingual gland (*gl.*) of right side. (Left gland removed to show anterior end of left arm of sclerite); *d.* duct.

Fig. 4. *Læmobothrium gypsis* Kell.—Mandibles, ventral view.

Fig. 5. *Ancistrona gigas* Praget.—Labium and maxillæ, ventral view; *l.* apical lobe of maxilla; *lab.* labium; *mx.* body of maxilla fused with edge of labium; *pl.* maxillary palpus.

Fig. 6. *Ancistrona gigas* Praget.—Epipharynx and its supporting fork.

Fig. 7. *Ancistrona gigas* Praget.—Maxillary forks; *p. m.* protractor muscles; *r. m.* retractor muscle.

Fig. 8. *Ancistrona gigas* Praget.—Mandibles, ventral view.

Fig. 9. *Peripsocus californicus* Banks.—Labium, ventral view; *pl.* palpus.

Fig. 10. *Peripsocus californicus* Banks.—Maxilla; *l.* apical maxillary lobe; *mx.* body of maxilla (stipes); *pl.* palpus; *plf.* palpifer.

Fig. 11. *Troctes divinatorius* Müll —Labium, ventral view; *pl.* palpus.

Fig. 12. *Troctes divinatorius* Müll.—Maxilla and maxillary fork of ride side, ventral view; *ep.* epicranium; *f.* maxillary fork; *l.* apical maxillary lobe; *mx.* body of maxilla; *pl.* maxillary palpus; *p. m.* protractor muscles; *r m.* retractor muscles.

Fig. 13. *Troctes divinatorius* Müll.—Mandibles, dorsal view.

Fig. 14. *Peripsocus californicus* Banks.—Mandibles, ventral view.

Fig. 15. *Peripsocus californicus* Banks.—Maxillary fork.

Fig. 16. *Peripsocus californicus* Banks.—Oesophageal sclerite (*œ. scl.*) and lingual glands (*gl.*), ventral view; *d.* duct; *ped.* peduncle of gland.

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NOTES ON SOME BEES IN THE BRITISH MUSEUM.

BY T. D. A. COCKERELL.

As is well known to all Hymenopterists, the British Museum contains one of the most valuable collections in this group in existence, notwithstanding the fact that it has received little attention during recent years. The ants, at the present time, are being carefully put in order by Colonel Bingham; but the bees have never been rearranged since the death of Mr. F. Smith, about twenty-six years ago. To bring the collection of bees into harmony with modern ideas, and to incorporate and identify the great accumulations at present crowded unarranged in the accession drawers, would be a gigantic but most interesting task. No doubt there are hundreds of new species waiting to be described by anyone who has the time and ability to take them in hand. Some of the material comes from the most out-of-the-way regions, and will throw much light on problems of geographical distribution; some belong to genera of which many Apidologists have never seen a specimen.

During my short recent visit to the Museum I naturally gave most of my attention to the types of F. Smith, of which no less than 238 belong to North American species. The descriptions of many of these, though good for the time when they were written, are inadequate for modern requirements. Characters which amply distinguished a given species from all then known, may be found today to be common to two or more species, which must be separated by other more subtle marks. Hence it seemed desirable to take notes on most of the North American species, for the purpose of more accurately fixing their identity. At the same time, notes were made on many others, and especially on some of the rare and interesting genera which I had never seen before. It is hoped that all these will be found of interest to American and other Apidologists, but of course it will be recognized that they represent only a small part of the work which needs to be done upon the types in the British Museum. I am greatly indebted to Mr. W. F. Kirby and Colonel Bingham for their kindness to me during my visits to the Museum.

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The following abbreviations are used: (T.) = type specimen examined; s. m. = submarginal cell; r. n. = recurrent nervure; b. n. = basal nervure; t. c. = transverso-cubital nervure; t. m. = transverso-medial nervure; hind spur = hind spur of hind tibia; area = basal area of metathorax; abd. s. = abdominal segment.

NOMADA Fabr.

Nomada valida Sm. ♀ (T.).

A comparatively large, red and black, *Nomada* s. str.; expanse about 17½ mm.; mandibles simple; scape with dark hairs; third antennal joint nearly as long as fourth; third s. m. much narrower above than second; b. n. very slightly basad of t. m.; metathorax black, with a large red spot on each side of area, and a minute red dot on each lateral area; basal half of first abd. s. black right across; pygidial plate very broad and rounded.

Nomada americana Kirby.

The type is not in the collection. The specimens under this name are a mixture of *Nomada* s. str. and *Gnathias*, but include no *Nomadula*. Our so called *Nomada americana* will have to be called *N. articulata* Sm.

Nomada imbricata Sm. ♀ (T.).

Expanse about 18 mm.; mandibles simple; labrum pale yellow, not toothed; head red, a round yellow spot below each antenna, and below each of these a smaller black spot on clypeal margin; third antennal joint slightly shorter (also redder) than fourth; mesothorax red, with no yellow lines; scutellum bilobate, the lobes yellow; metathorax blackened in middle, and laterally red, with an irregular (hook-shaped) yellow mark; legs red, hind femora and tibiæ more or less black behind; wings strongly yellowish, stigma ferruginous; b. n. passing considerably basad of t. m.; third s. m. high and narrow.

Nomada torrida Sm. ♀ (T.).

Basal nervure passing just basad of t. m.; antennæ with first three joints red, the others dark, 3 and 4 about equal.

Nomada fervida Sm. ♀ (T.).

Third antennal joint a little longer than fourth; mesothorax with very coarse large dense punctures; anterior coxæ spined; wings

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strongly reddish, fuliginous at apex, stigma ferruginous, nervures fuscous; second s. m. very large; third s. m. greatly contracted above; b. n. meets t. c.

Nomada borealis Zett. ♂.

Taken by Redman in Nova Scotia, and identified by F. Smith. Head black, with anterior part of clypeus broadly, lateral face marks (with a linear extension upwards almost to level of antennæ), labrum and manbibles, except their ferruginous ends, bright yellow; mandibles simple; third antennal joint almost as long as fourth seen from above, but conspicuously shorter seen from below; thorax entirely black; stigma and nervures ferruginous; second and third s. ms. about equally broad; b. n. going slightly basad of t. m.; abdomen dark red, copiously ornamented with yellow; apical plate notched.

Nomada annulata Sm. ♀ (T.).

A rather slender insect, with long antennæ, so that it looks rather like a male; antennæ entirely dull ferruginous above and below; third joint a little longer than fourth; mandibles simple; labrum covered with long hair; b. n. passing a short distance basad of t. m.; abdomen shining, with four broad light yellow bands, and one on first segment ferruginous in middle and yellow at sides.

Nomada miniata Sm. ♀ (T.).

Mandibles simple; third antennal joint much shorter than fourth; mesothorax red, but with yellowish shades indicating the four yellow bands of *Xanthidium:* tegulæ red and strongly punctured; b. n. meeting t. m. on the basad side; stigma dark ferruginous; outer side of third s. m. strongly elbowed; abdomen red above and below, except a large orange spot on each side of second segment above. It is a very red *Xanthidium.*

Nomada sulphurata Sm. ♀ (T.).

Third antennal joint very much shorter than fourth and red, contrasting with the rest of flagellum, which is dark; b. n. some distance basad of t. m.

Nomada nigrocincta Sm. ♀ (T.).

Mandibles simple; third antennal joint conspicuously shorter than fourth on under side; flagellum red above and below, but with a row of blackish dots above; b. n. a short distance basad of t. m.

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Nomada intercepta Sm. ♂ (T.).

Vancouver Island. Is a *Holonomada*. Mandibles simple; head very hairy, supraclypeal area with a yellow spot; third antennal joint longer than fourth; pleura black, with a large yellow mark in front; metathorax with a yellow mark on each side; apical plate of abdomen narrow, broadly rounded, entire.

Nomada (Gnathias) volatilis Sm. ♂ (T.).

Expanse about 18 mm; mandibles dentate; third antennal joint conspicuously shorter than fourth; mesothorax with two indistinct red lines, scutellum red; tegulæ red, yellowish in front; abdomen shiny, its venter red, without yellow marks; apical plate deeply emarginate; b. n. passing far basad of t. m.

Nomada (Gnathias) albofasciata Sm. ♂ (T.).

Mandibles dentate; third antennal joint moderately shorter than fourth; b. n. passing far basad of t. m.; apical plate deeply emarginate.

Nomada (Nomadula) articulata Sm. ♂ (T.).

This is the species we have so named, but the type specimen has the first t. c. reduced to a stump in one wing and wanting in the other. Mandibles simple; third antennal joint shorter than fourth; b. n. just basad of t. m.; abdomen strongly punctured, apical plate emarginate. The specimen has been much broken, and mended. Two specimens placed with the type are quite other species.

Nomada montezumia Sm. ♀ (T.).

Face with an oblique yellow mark on each side; labrum and cheeks below eyes with a dense white tomentum; third antennal joint longer than fourth; b. n. meets t. m.; abdomen remarkably hairy, except first segment, which is smooth and shining; ventral surface covered with hair. The hind tarsus bears the pollen-body of an Asclepiad.

The following six species, from South America and Asia, all have simple mandibles:

Nomada advena Sm. ♀.

Colombia. Third antennal joint longer than fourth above, a little shorter below; third s. m. extremely long, narrowed quite two-thirds above; b. n. meeting t. m. on basad side; abdomen slender basally; apex with a semilunar hairy area.

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Nomada infrequens Sm. ♀.

Brazil. Peculiar for the extremely coarse sculpture of mesothorax, which on scutellum becomes a mass of irregular tubercles; b. n. meets t. c.; third s. m. greatly narrowed above; wings quite dark.

Nomada japonica Sm. ♀.

Japan. Looks like our species of *Xanthidium*. Orbital margins yellow in front and behind; third antennal joint longer than fourth; flagellum all red above and below; b. n. a short distance basad of t. m.; second submarginal cell narrowed above; first t. c. broken in the middle on both sides; abdomen of the minutely tessellate type.

Nomada fervens Sm. ♀ (T.).

Japan. A red and black *Nomada* s. str. Third antennal joint much shorter than fourth; b. n. some distance basad of t. m.; the only yellow on abdomen is a single large transverse spot on fifth dorsal segment.

Nomada xanthidica n. n.

Nomada versicolor Sm. (not of Panzer), ♀ (T.). Looks like our species of *Xanthidium*. Third antennal joint a little longer than fourth; b. n. a fair distance basad of t. m. N. China.

Nomada lusca Sm. ♀ (T.).

Philippine Islands. Small red species; looks like our *Nomada* s. str., a form with abdomen tapering at base. Third antennal joint a little longer than fourth; sides of metathorax with white tomentum; b. n. some distance basad of t. m.

EPEOLUS Latr. sens. lat.

First two abdominal segments and the scutellum red; legs red; punctures of abdomen distinct but minute; silvery area on fifth abdominal segment not very large; antennæ, upper border of prothorax and tubercles red; tibial spurs pale reddish.....**zonatus** Sm. (T.).

First two abdominal segments not red.....1.

1. First abdominal segment entirely without bands or patches of pubescence; specialized area on fifth segment large; stigma large; marginal cell broadly rounded, its apex away from the costa; face covered with silvery tomentum (Brazil).....**albifrons** Sm. ♀ (T.).

First abdominal segment with conspicuous bands or patches of pubescence..2.

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2. Hind margin of first abd. s. with a band (usually interrupted) of pubescence...3.
   Hind margin of first abd. s. without any band of pubescence, but there is an interrupted band in the middle, representing the anterior part of the usual ornamentation; abdomen more pointed than usual posteriorly; area on fifth segment small, semilunar, the segment itself small; second s. m. broader below than the first (Ega)....**vagans** Sm. ♀ (T.).
3. Median black area of first abd. s. not produced laterally; pubescence on second segment at sides forming approximately right angles on inner side; size large (like *remigatus*, etc.); legs black, spurs black; last ventral segment directed downwards at tip; wings strongly violaceous; clypeus with numerous minute punctures and sparse large ones.
   nigriceps Sm. ♀ (T.).
   Median black area of first abd. s. produced laterally .....4.
4. Legs black.....5.
   Legs red or nearly so .....6.
5. Pubescence of abdomen greyish white, without any yellowish tint.
   donatus Sm. (T.).
   Pubescence of abdomen decidedly yellowish white on first two segments, but not so on apical half.....**tepanecus** Cresson.
6. Anterior arms of pubescence on first abd. s. not at all approaching, their inner angle with the posterior band (which is continuous in the middle) sharp; silvery area on fifth segment short.
   flavofasciatus Sm. (T.).
   Anterior arms of pubescence on first abd. s. more or less approaching, or almost touching.....7.
7. Lateral projections of black area on first abd. s. rounded; wings nearly clear.
   occidentalis Cresson.
   Lateral projections of black area on first abd. s. sharply pointed; wings greatly darkened.....**intrepidus** Sm. (T.).

Robertson has stated that *E. zonatus* is a synonym of *E. scutellaris* Say. It is not at all like the species labelled (I believe quite correctly) *scutellaris* in the Museum.

Triepeolus nigriceps (Sm.) runs in my New Mexico table to "*E. robustus*" (i. e. *nevadensis*), but differs by the fifth abd. s. being wholly without patches of light pubescence. It has a tuft of black hair, but no strong prominence, between the antennæ. The anterior part of mesothorax is broadly margined with light pubescence, this being narrowly interrupted in the middle, and on each side of the middle sending a short tongue backwards.

RHATHYMUS Lepeletier.

For the sake of comparison, I include in my table *Eurytis funereus*, which looks just like a *Rhathymus*.

Abdomen red.....1.
Abdomen black.....2.

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1. Head and thorax red, sides of metathorax with patches of bright white hair (Para) ..... **unicolor** (Sm.) ♀.
   Head and thorax black, sides of metathorax with duller patches (Brazil). **bicolor** Perty ♀.
2. Abdomen narrower, with four white spots (Mexico). **quadriplagiatus** (Sm.).
   Abdomen broader, without white spots ..... 3.
3. Second submarginal cell as broad above as below; third s. m. broader below than second ..... **ater** (Sm.) ♂.
   Second s. m. narrower above than below; third s. m. much narrower below than second ..... **Eurytis funereus** Sm.

The general appearance of the last two is the same. *R. bicolor* is credited to Perty in the Museum, but it is believed to be identical with the earlier *bicolor* of Lepeletier. *R. quadriplagiatus* is a very peculiar large bee, closely imitating *Scolia guttata* Burm., with patches of white hair on face, prothorax, pleura, sides of metathorax, and especially four large ones on abdomen. The abdominal spots of pubescence imitate the tegumentary spots of *Scolia*. The first r. n. meets the second t. c.; the second s. m. is very broad, but somewhat narrowed above; the second and third are about equally broad below. In *R. bicolor* the second s. m. is extremely broad, and not narrower above; the third is not broader below than second. In *R. quadriplagiatus* the apical segment of the male abdomen is bidentate, and has a median raised line; in *R. ater* it has a narrow truncate plate.

The maxillary palpi in the type of *Eurytis funereus* are 3-jointed, the second joint very long, the others very short. These palpi are to all appearances quite absent in *R. ater, unicolor, bicolor* and *quadriplagiatus*, as stated by Smith and others.

OSIRIS Smith.

Curious slender yellow bees, like Ichneumonids or slender Mutillids; stigma large, wings hairy, venation quite Andrenoid, but tongue entirely of the long type.

Abdomen with distinct, clean-cut dark bands; size smaller; legs yellow (Mexico) ..... **marginatus** Cresson.
Abdomen without any distinct dark bands ..... 1.
1. Legs yellowish testaceous; third s. m. on marginal nervure about as long as distance from its base below to second r. n. ..... **pallidus** Sm. (T.).
   Legs ferruginous; third s. m. on marginal nervure much shorter than distance from its base below to second r. n. ..... **tarsatus** Sm. (T.).

In the Museum is an apparently undescribed species which runs to *pallidus* in the above table, but is considerably larger.

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LEIOPODUS Smith.

Leiopodus lacertinus Sm. ♂.

A peculiar South American Epeoloid bee, with narrow abdomen and large and long hind coxæ. Second s. m. very broad, broader below than first; b. n. falling a considerable distance short of t. m.

MELISSA Smith.

Bees looking like *Thalestria*, but with a shorter abdomen. The middle tibiæ of all the species have strongly modified spurs; in *M. insignis* ♂ the spur ends in two prongs of about equal length, but one of them, which is slightly curved, has on its inner side two little spines; in *M. regalis* ♀ the arrangement is the same, except that the spine bearing prong is much shorter than the other. The sexes of *M. insignis*, according to the collection and description, are remarkably different; if it should prove that they are wrongly associated, it is not exactly apparent which ought to carry the name, as the ♀ has priority of place in the description, while the ♂ carries the type label in the collection. The following table brings out the differences referred to, and compares the species with *M. regalis:*

Head and thorax with extremely brilliant yellow pubescence, the area between the wings dark, as in some *Bombus;* small yellow hair-spots on sides of abd. s. 1 and 2 ..... **insignis** Sm. ♂ (T.).

Not so; general color not due to pubescence to any extent ..... 1.

1. Face, cheeks and occiput densely covered with silvery-white hair; two long pencils of red hair projecting from apex of labrum.. **regalis** Sm. ♀.

Face without white hair, except a tuft at outer side of each antenna; labrum covered with black hair, the downwardly directed pencils of hair black ..... **insignis** Sm. ♀.

M. rufipes Perty (said to = *azurea* Lep.), ♂, is distinguished by the dark reddish legs, hind femora with a tooth beneath at base; hair on clypeus shining, white stained with sulphur-yellow.

M. decorata Sm., ♀ (T.), has white hair up each side of face, stained with sulphur-yellow at upper end.

MESOCHEIRA Lepeletier.

Bees with the general build and color of *Thalestria.*

Apex of wing with a large square fuliginous spot; scutellum with two flat processes overlapping base of abdomen; abdomen without lateral white marks ..... **bicolor** (Fabr.) ♀.

Costa in region of marginal cell and beyond fuliginous, but no square black spot; scutellum with only two tubercles; abdomen with lateral white marks. **asteria** Sm. ♀.

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M. asteria was described from "Brazil," but the label specifies the exact locality—Santarem. The middle tibiæ of these bees have spurs less modified than those of *Melissa; M. bicolor* has them truncate, the truncation with three straight spines, the middle one shorter than the others; *M. asteria* shows three very small equal spines, and one big one at the side.

ANDRENA Fabr.

My notes on the American species of this genus will be published by Mr. Viereck in connection with his revision of the American Andrenids.

Andrena vitiosa Sm. ♂ (T.).

N. China. Antennal joints 6–8 strongly convex beneath; head extremely broad, eyes comparatively small; clypeus yellow, short and broad, very much broader than long; palpi normal, first joint of labial palpi not nearly so long as the others united; cheeks very broad, swollen and shining; prothorax elevated into a hump on each side above; area small, very narrow and pointed behind, not margined; stigma large.

Andrena dentata Sm. ♂ (T.).

Japan. Antennæ long, third joint very much shorter than fourth, also shorter than fifth; cheeks broad, angled behind above middle; the remarkable long spines, directed downwards, described by Smith as coming from the bases of the mandibles, are really from the lower part of the malar region; area rather small, triangular, more shining than the parts on each side of it, but not wrinkled or bounded by any raised line; apical ventral plate broadly truncate, the truncation slightly concave.

PASIPHAË Spinola.

Pasiphaë tristis Spinola ♂.

Chile. A black bee with narrow shining abdomen, with hind margins of segments testaceous; head and thorax with much long hair; area triangular, smooth, minutely beaded on margin; clypeus overlapped by a long moustache of shining white hair; b. n. meets t. m. which is very oblique. Looks like a *Parandrena* or *Hesperapis* superficially, and stands in the Museum between *Andrena* and

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Stenotritus. Ashmead places it in the Prosopidæ, where it seems quite out of place.

P. tristis agrees with *Parandrena andrenoides* in having the t. m. oblique and the first r. n. joining the second s. m. far from its base. In *Hesperapis rhodoceratus* the t m. is not oblique, and the first r. n. joins the second s. m. at its base. The *Pasiphaë* also looks much more like the *Parandrena*, though its face is all black, and the stigma is not so large (being narrower), and the area is different.

Since the mouth parts of *Pasiphaë* take it out of the Andrenidæ, and the general structure and appearance remove it from the Prosopidæ, it seems that it can only rest in the Colletidæ, as its position in Dalla Torre's Catalogue would suggest.

MYDROSOMA Smith.

Mydrosoma metallicum Smith.

Brazil. Looks like a rather large *Andrena* with dark greenish blue abdomen; structurally, of course, it is quite different. Marginal cell truncate.

MEROGLOSSA Smith.

Meroglossa canaliculata Smith.

Australia. A very distinct thing; middle-sized, thorax and abdomen black and punctured, not unlike some *Prosopis*. Face very peculiar, presenting a concave shining black impunctate surface, divided up to level of antennæ by a very broad raised sparsely punctate longitudinal cream-colored band, the same raised pale surface extending over the malar area, and as a narrow line up each inner orbital margin; ocelli large and prominent; scape much swollen; area triangular, distinguished by absence of pubescence; claws bifid; only two submarginal cells, the second receiving both r. n.; second r. n. strongly bent, but without a double curve. In Ashmead's table it is said to have the stigma very small; this is not at all the case. As to the systematic position of the genus, cf. Trans. Am. Ent. Soc. xxix, p. 185.

CALLOMELITTA Smith.

Callomelitta picta Smith.

Tasmania. ♀. A curious bee, rather like a large *Prosopis*, but wings fuliginous except at base, with three s. ms.; and mesothorax,

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scutellum and pleura nude, shining brick-red. Last antennal joint obliquely truncate, the truncation shining; a small tooth on middle of anterior margin of clypeus; mandibles tridentate at apex; h. n. meets t. m.; first r. n. joins second s. m. at its middle; nervures with hyaline spots; abdomen dark blue; hind trochanters with long hair, but not a *curled* floccus; the hair, however, is strongly plumose, and the scopa of hind tibiæ is also plumose.

♂. More slender; mesothorax black in middle; pleura black; abdomen black; anterior tibiæ and tarsi red; antennæ black, flagellum crenulate beneath; mandibles bidentate at apex.

STENOTRITUS Smith.

This Australian genus is distinguished from *Andrena* by the spurs of the middle tibiæ, which are very long and pectinate with numerous short spines. In addition to the two species given below, the Museum contains a third (undescribed) species from W. Australia; it is similar to *elegans*, but smaller. While *S. smaragdinus* and *S. elegans* are congeneric, they are not closely allied.

Stenotritus smaragdinus Sm. ♀ (T.).

Like a very large, bright green *Andrena;* third antennal joint very long; mesothorax with much white plumose hair; area reduced to a very minute basal nearly equilateral triangle; second s. m. extremely broad, receiving first r. n. a little before its middle; hair at apex of abdomen black; pygidial plate large.

Stenotritus elegans Sm. (T.).

Not quite so large as the last; black, hair at apex of abdomen rufo-fulvous. Area produced apically, so as to form a broad band passing down metathorax; first r. n. joining second s. m. a little beyond its middle. Last antennal joint (♀) compressed, so as to be pointed seen from above, rounded seen from in front.

CAMPTOPŒUM Spinola.

The European *C. frontale* (Fabr.), of which a ♀ from Hungary has been examined, must be regarded as the type of the genus. The Chilian *C. trifasciatum* Spinola is very different, as the following comparison shows:

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C. frontale.	C. trifasciatum.
Spinoliella-like in appearance.	Rather *Colletes*-like in appearance.
Smaller.	Larger.
Very little hairy.	Rather hairy.
Abdomen with four cream-colored tegumentary bands, like a *Spinoliella*.	Abdomen with hair-bands like a *Calliopsis*.
B. n. falls far short of t. m.	B. n. meets t. m.
Supraclypeal mark, and a small spot just below it (on clypeus) cream color.	Supraclypeal mark, and a spot on each side of it, cream color.
Abdomen without any bluish or greenish lustre.	Abdomen with a strong bluish or greenish lustre.
Second submarginal cell longer than first (considerably longer below).	Second submarginal cell scarcely longer than first.

C. trifasciatum has the marginal cell obliquely truncate; the lateral lower corners of clypeus are produced downwards into a spine, as in some forms of *Perdita*. In Ashmead's tables this species runs to *Camptopœum*, though it does not agree with the characters of the genus.

The type of *Spinoliella* is the Chilian *S. nomadoides* (*Camptopœum nomadoides* Spin.). I have not seen this insect, but the American *S. scitula* and *S. australior* are easily separated from the above two species of *Camptopœum* by the fact of having the first submarginal cell longer than the second, as is duly indicated by Ashmead in his original description of the genus. They resemble *C. frontale*, and differ from *C. trifasciatum* in having the b. n. falling far short of t. m. To all appearances *C. frontale* is nearer to *Spinoliella scitula* and *australior* than it is to *C. trifasciatum*. According to Friese, *Camptopœum* is almost naked, always marked with yellow. Two species (*C. handlirschi* and *rufiventre*) have the abdomen red, banded with yellow.

By the characters cited, it appears evident that *C. trifasciatum* must form the type of a new genus.

ACAMPTOPŒUM n. g.

Type, *Acamptopœum trifasciatum* (*Camptopœum trifasciatum* Spinola, 1851).

PSÆNYTHIA Gerstaecker.

Psænythia burmeisteri Gerst.

Dalla Torre gives this as from Brazil; the label on the specimen examined states it to be from the Argentine Republic. Face marks

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peculiar, a large quadrate yellow patch on each side, a smaller elongate quadrate yellow patch below each antenna, and a pyriform yellow patch (about the size of those below the antennæ) below each of the large patches; scutellum with a pyriform yellow spot on each side; postscutellum with a yellow band; abdomen with five broad yellow bands.

LAGOBATA Smith.

Lagobata diligens Smith.

Very peculiar; abdomen narrow, with a subtruncate base—rather carrot-shaped; hind spur with a comb of very numerous and closely placed long teeth.

CALLIOPSIS Smith.

Calliopsis maculatus Sm. ♀ (T.).

This is a genuine *Calliopsis;* it has been erroneously referred to *Spinoliella.* The depressed apical margins of the abdominal segments are testaceous. The face markings are rather complicated; the sides of the clypeus are yellow, and there is a small yellow streak on each side adjacent to clypeus; the yellow supraclypeal mark is broad and rounded above, and there is a triangular yellow mark below each antenna, one side of it contiguous with the clypeus.

Calliopsis flavifrons Sm. ♀.

This was described from a male with a yellow face; instead of this, I find the type label on a female, the face-marks of which are white, with only the faintest yellow tint. These marks consist of a narrow stripe down the middle of the clypeus; a large supraclypeal mark, broadly rounded above; and large lateral marks, much longer than broad. It may be that this is the true female of *flavifrons.*

MACROTERA Smith.

Macrotera bicolor Sm. (T.).

Tongue linear, extremely long, longer than thorax; clypeus shining, with irregular large punctures; marginal cell broadly but obliquely truncate; b. n. falling far short of t. m.; extremely long, curved, simple hairs on hind tibia; abdomen dullish, with anal fimbria fulvous.

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NOMIA Latr.

Nomia nana Sm. ♀ (T.).

Adelaide, Australia. *N. ruficornis* Sm. (a small black species with red flagellum; abdomen with light hair-bands) was described from the ♂, and is, I feel sure, the mate of *N. nana*. Consequently the name *N. smithella* Giboda, proposed because *ruficornis* is a homonym, is needless.

The variety of form and color in the genus *Nomia* (sens. lat.) is remarkable. The following summary of the principal types will be of interest to those who have only seen our American species:

(1.) Species of the subgenus *Paranomia* Friese, like our *N. fori*, with the hind margins of the abdominal segments brightly colored.

Nomia formosa Sm. ♂, from Celebes, has five green abdominal bands shaded with purple; abdomen very coarsely punctured.

N. elegans Sm. ♀, from Celebes, has four yellow-green abdominal bands shot with vermillion; second s. m. almost square.

A third species from Celebes (♀) bears a manuscript name which is preoccupied; it has only three abdominal bands (margin of first segment black), which are light emerald green with pinkish tints. The punctures of the abdomen are large and well separated. Length about 12 mm.

Nomia opulenta Sm., from Morty Island, ♀, has four abdominal bands, these green, shot with vermillion; abdomen only moderately coarsely punctured; postscutellum densely covered with ochrey-whitish hair; tegulæ ferruginous; second submarginal cell very narrow (it is not so narrow in *N. formosa*).

(2.) *N. australica* Sm. ♀. Australia. Abdomen dark bluish or greenish, with two broad bright ferruginous bands of appressed hair on hind margins of segments 3 and 4.

(3.) Head and thorax black, abdomen red; as the African *N. rubella* Sm. and the much smaller *N. serratula* Sm. from Natal.

(4.) Abdomen red and black, with ochreous hair-bands (style of our *N. nevadensis*, etc.). *N. floralis* Sm. from Hong Kong.

(5.) *N. producta* Sm. ♂ (T.). Natal. Abdomen claviform, narrowed basally; second s. m. very broad; first r. n. joining second t. c.; b. n. strongly bent, falling short of t. m.; clypeus greatly produced; hind tibia with a great white lamina, which bears the spurs.

(6.) *N. nilotica* Sm. (T.). White Nile. A smallish red and black species, with enormous milky-white tegulæ, reaching from tubercles to corners of metathorax; metathorax, pleura and most of first two abd. s. red; face and anterior margin of thorax densely covered with white tomentum; first r. n. meeting second t. c.; third s. m. considerably longer than the first.

(7.) *N. nubecula* Sm. (T.). Sierra Leone. Remarkable for having the apical corner of the wing broadly dark fuliginous, sharply contrasting with rest of wing, which is hyaline; wings hairy; face narrow.

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It is probable that some of the African forms should be separated generically, but I do not feel able to define such genera without access to more material.

TRIGONA Jurine.

Honey colored; hind tibiæ translucent; sides of face white-pollinose. **luteipes** Sm.

Not honey colored ..... 1.
1. Abdomen red ..... **bipartita** Lep.
Abdomen not red; insect black or almost ..... 2.
2. Size much larger ..... **capitata** Sm.
Size much smaller ..... 3.
3. Each side of face grey-pollinose; hair of scutellum black .. **mexicana** Guér.
Sides of face not pollinose; wings not so dark as in *mexicana;* middle of clypeus reddish; flagellum clear red beneath ..... **bilineata** Say.

Another small black species is *T. cressonii* Dalla Torre.

LESTIS Lepeletier.

Lestis bombylans (Fabr.) ♂.

Thorax and abdomen yellowish green; thorax in front with fulvous hair, the three bands just visible as a darker shade; light area on face red.

Lestis serata Smith ♂.

Thorax and abdomen bluish green, with blue shades on thorax; thorax in front with three black bands and fulvous between them; light area on face pellucid or opaque white. Female bluer than that of *bombylans.* Var. *violascens* (var. nov.), ♂, has much violet color on abdomen.

ALLODAPE Lepeletier.

General appearance like *Ceratina;* only two submarginal cells; first s. m. very much longer than second, second receiving both r. n.; stigma large.

The three Australian species may be separated thus:

Sides of face yellow; abdomen with suffused brown bands ..... **picta** Sm. (T.).
Only middle of face light; abdomen black, without bands ..... 1.
1. Larger ..... **simillima** Sm. (T.).
Smaller ..... **unicolor** Sm. (T.).

The following are African:

Abdomen red ..... **rufogastra** Lep.
Abdomen reddish; scutellum yellow, except margins (Natal) .. **variegata** Sm.

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Abdomen red and black; very small; face with a very broad light band; legs red, with hind femora mainly black (Zululand).....**jucunda** Sm.
Abdomen not red .....1.
1. Face all black.....**panurgoides** Sm. ♀.
Face not all black .....2.
2. A broad cream-colored stripe down middle of clypeus (Abyssinia).
candida Sm. ♀.
Clypeus with a very narrow whitish stripe; inner orbits narrowly sordid white (Sierra Leone).....**pictifrons** Sm. ♀.

EXONEURA Smith.

Exoneura bicolor Sm. is essentially an *Allodape* with only one recurrent nervure. It is from Tasmania, and has a red abdomen, after the fashion of the African *Allodape rufogastra;* which is rather noteworthy, for the reason that the abdomens of the Australian species of *Allodape* are not red.

CERATINA Latreille.

(1) *Black species.*

Ceratina compacta Sm., Philippine Islands, is close to *C. hieroglyphica*, but smaller.

C. armata Sm., Cape of Good Hope, is pitch black and strongly punctured; clypeus with a creamy band; sixth abd. s. with a delicate longitudinal keel.

(2) *Species at least partly green or blue.*

(a) *Brilliant green (Chrysis-like) Asiatic species.*

C. sexmaculata Sm., Hong Kong. Strongly punctured, with a pair of curious black marks on each of abdominal segments 3–6; sixth segment with a short spine at the apex, and the margins on each side of it spinulose. The more strongly punctured form from Celebes, referred to by Smith, may be called var. *wallacei.*

(b) *American species.*

(i) Abdomen crimson.

C. eximia Sm. Head and thorax bright green; lateral face marks small, pyriform, the point mesad.

(ii) Abdomen not crimson.

Color a wonderful mixture of black and a beautiful dark blue, turning purple on abdomen; face with three cream-colored spots (Panama).
placida Sm.

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Color an extremely brilliant peacock-green .....1.
Color dark green or olive-green, or partly black..... .....2.
1. Larger, length a little over 11 mm.....**læta** Spinola.
Smaller.....**viridula** Sm.
2. Extremely minute, shining dark green; mesothorax extremely shining; legs pale testaceous .....**lucidula** Sm.
Not extremely minute..... .....3.
3. Dark green; sides of metathorax white-hairy, leaving the area bare, and shining yellowish green .....**pubescens** Sm.
Metathorax not thus hairy .....4.
4. Lateral face-marks present.....5.
Lateral face-marks absent.....6.
5. Not so large as *placida*; dark olive-green; lateral face-marks elongated, reaching level of antennæ (Panama).....**punctulata** Spin., Sm.
Legs dull red, but shining, hind femora only moderately angled below; green of apical part of abdomen bright; apex of abdomen bilobed, and from the interval projects a little curved spine; tongue long; lateral face marks small and narrow; wings long, stigma small and dark. **rufipes** Sm. ♂ (T.).
6. Abdomen olive-green; head very large, with a large oval cream-colored patch on clypeus; wings yellowish, stigma light fulvo-ferruginous, nervures almost colorless.....**capitosa** Sm. ♀ (T.).
Dark green, with a triangular creamy mark on clypeus; cheeks just behind eyes shining impunctate.....**rotundiceps** Sm.
Cheeks uniformly punctured; anterior tibiæ reddish in front, with a very well defined creamy-white stripe on the outer side; last dorsal segment of abdomen with a little longitudinal keel, on which is a brush of white hair; apex broadly rounded..... **strenua** Sm. (T.).

ANCYLOSCELIS Latreille.

Ancyloscelis armatus Sm. ♂.

Small and black, with enormously swollen hind femora, so that it looks like some Chalcid; basal joint of hind tarsi with a large rose-thorn like spine on inner side near base; abdomen with bands of white tomentum; anterior margin of clypeus, labrum and spot on maudibles whitish. The ♀ has light red antennæ, and very large plumose sooty scopa on hind tibia and tarsus. Galea long and tapering. According to Ashmead *Ancyloscelis* is *Diadasia,* but certainly *A. armatus* is not a *Diadasia.*

TETRAPEDIA Klug.

Very queer bees, something like *Exomalopsis,* but usually with longer abdomen.

T. punctifrons Sm. is honey color, with a large honey colored

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stigma; hind tarsal joint very broad. *T. diversipes* Klug, *T. amplipennis* Sm., *T. basalis* Sm., *T. maura* Cress. and *T. lugubris* Cress. are coal-black.

EXOMALOPSIS Spinola.

Exomalopsis rufitarsis Sm. (T.), ♀. Abdomen very shining black; basal nervure passing basad of t. m ; stigma dark brown.

E. fulvescens Sm. (T.), ♀. With much fulvous hair; tegulæ ferruginous; stigma pale honey color; b. n. passing far basad of t. m.

TETRALONIA Spinola.

Tetralonia fervens Sm. ♁.

Compared with *Melissodes luteicornis* Ckll., ♂, this is not so similar as I thought from the description. *T. fervens* is rather smaller than *M. luteicornis;* it has the flagellum strongly crenulate; it seems not unlikely that the flagellum was originally yellow, as it has a rather pinkish appearance.

Tetralonia fulviventris Sm. ♀.

Abdomen beyond first segment with short fulvo ferruginous pile; hair of hind tibiæ and tarsi long and bright red; third antennal joint about as long as 4 + 5. In some respects similar to the much larger *T. gabbi* Cresson.

Tetralonia flagellicornis Sm. ♁ (T.).

Looks like a *Melissodes;* the maxillary palpi are 6-jointed, though the sixth joint is very small. Clypeus yellow, with hind margin black; yellow spot on mandibles; antennæ extremely long, entirely black, flagellum crenulate; abdominal segments 2–5 with entire apical bands of white pubescence, having a slightly greyish tint. I think this should be known as *Synhalonia flagellicornis.* Some of its characters remind one of *S. crenulaticornis.*

Tetralonia decorata Sm. is a remarkable species, with the tegument of the abdomen entirely fulvous.

T. chinensis Sm. (N. China) has in the ♁ extremely long, entirely black antennæ, as in *flagellicornis.* The labrum is yellow, but the mandibles have no yellow spot.

T. fasciata Sm. (N. China), ♁, has the antennæ of about ordinary length for the group, the flagellum ferruginous beneath.

T. mirabilis Sm. is elsewhere referred to a new genus, *Trichocerapis.*

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T. atrifrons Sm., from Chile, is superficially so like certain Chilian forms of *Megachile* (especially *M. gasperinii* Schlett.) that I found a specimen placed in *Megachile*, with a label bearing a manuscript name (apparently not of Smith) as a new species of the latter genus! The pubescence is of a peculiar pale grey, black on pleura below the wings, and so far as it alone goes, it agrees throughout with the description of *M. gasperinii*. *M. chilensis* Spinola is also superficially similar, but is smaller, and has the hair of pleura under the wings pale grey. *T. atrifrons* has the mandibles slender and simply with an orange mark on outer side; pulvilli very large; r. ns. received near ends of second and third s. ms.; marginal cell rounded or obliquely subtruncate, tip away from costa; claws with an inner tooth.

Tetralonia dispar Sm., ♀ (T.), from Peru, has the wings very hairy; first r. n. joins second s. m. near but not at its end; scopa of hind tibiæ black, strongly plumose; hair of pleura black; of hind part of mesothorax, scutellum, etc., fulvo-ferruginous; abdomen without hair bands.

MACROGLOSSAPIS Ckll.

Maxillary palpi only 3 jointed; first r. n. meeting second t. c.; male with clypeus dark, but labrum light. Other characters like *Melissodes*. I feel justified in referring here the following three species, all described by Smith as *Melissodes;* in the case of *M. modesta* and *rubricata* I have examined the maxillary palpi, and found them 3 jointed, the first broadened basally, the others successively narrower. *M. terminata* is obviously related to *modesta*, but distinguished by the color of flagellum.

Macroglossapis terminata Sm. ♂.

The specimen is marked type, but the label on the pin states that it is from Brazil, and it is a male, while the original description is said to be of a ♀ from Venezuela. Clypeus black; labrum large and yellow; mandibles with no yellow spot; flagellum bright red beneath, except at end (last 2½ joints), where it becomes black.

Macroglossapis modesta Sm. ♂ (T.).

Antennæ extremely long, flagellum black; clypeus wholly dark; labrum large, yellowish white. The third antennal joint is extremely short, the fourth (long) is somewhat swollen.

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Macroglossapis rubricata Sm. ♀.

Peculiar for the reddish abdomen, clouded with darker; except for the broader abdomen it rather suggests a Ligurian honey-bee.

XENOGLOSSA Smith.

Xenoglossa fulva Sm. ♀ (T.).

Superficially just like *X. patricia* Ckll.; ground (tegumentary) color of head black, and of abdomen fulvous, as in *patricia*. It differs from *patricia* by having the pygidial plate broader at apex; the abdomen larger and with appressed fulvous pubescence covering the surface, in consequence of which it looks paler and duller than that of *patricia;* thoracic pubescence a redder orange.

Xenoglossa mustelina (*Centris mustelina* Fox) is a valid species, not a synonym of *X. fulva.*

MELISSODES Latr.

Melissodes hæmorrhoidalis Sm.

South America. Looks like a small *Tetralonia gabbi*, having the same reddish abdomen, black basally. It has the hair of the mesothorax black.

Melissodes smithii D. T. (*californicus* Sm.).

A large species like *M. obliqua*, with the same red hair on inner side of first joint of hind tarsi in ♀. The female has the thorax densely covered with bright fulvo ferruginous hair; abdomen with very distinct light hair-bands, hair of apex black; wings hardly so dark as in *obliqua*. In *obliqua* the first r. n. joins the second s. m. a considerable distance from its end, in *smithii* almost at its end. In *obliqua* the flagellum is strongly reddened beneath, which is not the case in *smithii*. The male *smithii* has the hair on the apical part of ventral surface of abdomen black, but otherwise pale; abdomen above with very distinct bands, like the ♀; flagellum wholly dark, or at any rate not distinctly reddened.

Melissodes hirsuta Sm. ♂ (T.).

Flagellum red beneath. Ordinary looking species, with yellow clypeus; black labrum; no yellow spot on mandibles; hair of thorax above very lively fulvo-ferruginous Close to *M. aurigenia*, but wings faintly dusky, with dark brown stigma and nervures, not whitish, with ferruginous stigma and nervures as in *aurigenia*. The labrum of *aurigenia* is yellow, but that of *hirsuta* is black.

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Melissodes ambigua Sm. ♀ (T.).

A species suggestive of *M. perplexa*, but that has light hair on pleura, while the hair on the pleura of *ambigua* is black. Much black hair on mesothorax and scutellum, but the light hair is dull whitish, not fulvo-ferruginous; scopa of hind tibia plumose; hair on inner side of last joint of hind tarsi black; first r. n. joins second s. m. far before its end.

Melissodes assimilis Sm. ♂, ♀ (T.).

Not a true *Melissodes* I think, but its place must be settled by an examination of the mouth-parts. ♂.—Clypeus and labrum black; antennæ only moderately long, not reaching to abdomen, black, with a very faint reddish tinge on flagellum beneath; flagellum crenulated; first r. n. joins second s. m. a considerable distance before the end. ♀.—Flagellum bright ferruginous beneath, except at base; hind middle of mesothorax and middle of scutellum with black hair, surrounded on all sides by bright rufo-fulvous; hind tarsus with the hair on inner side of first joint reddish-black; scopa of hind tibia abundant and strongly plumose.

Melissodes atrata Sm. ♂ (T.).

Maxillary palpi 5-jointed, the fifth minute; therefore not a true *Melissodes*. Clypeus black, with a large transverse yellow patch; mandibles with no yellow spot; hair of pleura and dorsum of thorax black; first r. n. joins second s. m. not much beyond its middle.

Melissodes obscura Sm. ♀ (T.).

S. Paulo, Brazil. Maxillary palpi 5-jointed; not a true *Melissodes*. Middle and hind tibiæ with very large spurs; hair of hind tibiæ black, long, bristle like, simple; abdomen peculiarly marked, black, with base of first segment with ochraceous hair, second with a basal streak of white tomentum on each side under rim of first, fourth with two large ochraceous spots (sometimes two little spots on third), fifth and apex nearly all rufo-ochraceous.

Melissodes manipularis Sm. ♂ (T.).

Antennæ long, flagellum bright ferruginous beneath; clypeus yellow, labrum with a large yellow spot; mandibles with no yellow spot; posterior part of mesothorax and scutellum with much black hair, surrounding hair ochraceous; first r. n. joins second s. m. not far from its end.

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Melissodes atropos Sm. ♀ (T.).

Santarem, Brazil. Scutellum broad and flat, very shiny, punctured; wings fuliginous, first r. n. joining second s. m. well before its end, outer margin of third s. m. very sharply angled; hair of hind tibia black, bristle-like, plumose, though not apically; abdomen black and shining, strongly punctured, a small spot of white hair on each side of apical margin of fourth segment; apical half of venter with lateral tufts of white hair.

Melissodes n. sp. ?

Constancia, Brazil, January, 1857, J. Gray. Very peculiar; second and third abdominal segments with glittering bands of appressed light golden hair, that on third very broad; the fourth has a few golden hairs; first r. n. joining second s. m. at its extreme apex. This species bears a manuscript name of Smith's, which if published now would be a homonym.

SAROPODA Latr.

Large, with dense bright orange-red pubescence (Australia). **bombiformis** Sm.

Smaller, abdomen banded; pubescence of thorax with much black intermixed. (Europe) ..... **bimaculata** Pz.

S. bombiformis has the maxillary palpi 4-jointed, the second joint extremely long, the fourth black and spine like; the labial palpi have only one free joint.

S. bimaculata has the same, except that the fourth joint of maxillary palpi is ordinary. The basal nervure in *bimaculata* passes slightly basad of t. m., but in *bombiformis* it falls short of it. The appearance of *S. bombiformis* recalls *Xenoglossa patricia*.

PACHYMELUS Smith.

This is a valid genus of Anthophorini, though Dalla Torre makes it a subgenus of *Podalirius*, and Ashmead omits it altogether from his tables. *P. micrelephas* Sm. from Madagascar is gigantic, over 30 mm. long. *P. conspicuous* Sm. from Nyassa is smaller. Both have 5-jointed maxillary palpi; galea thick, not especially elongated; the maxillary palpi are less than half the length of the galea. The paraglossæ are not hairy; in *P. micrelephas* they are long and narrow, about half the length of the labial palpi, which are very broad sheathing basally; but in *P. conspicuus* the paraglossæ are

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very short and pointed. Both species have simple mandibles, those of *conspicuus* are angled within. The tongue is broken in the specimen of *micrelephas*, but in *conspicuus* it is only moderate, little exceeding the labial palpi. *P. micrelephas* has the scutellum strongly bituberculate, in *conspicuus* it is at most slightly depressed in the middle. The venation of *micrelephas* is nearly that of *Habropoda*; both r. ns. meet the t. cs. The clypeus of *micrelephas* is strongly produced, triangular in lateral view, with the semicircular receding lower half sparsely punctured. In *P. conspicuus* the clypeus is merely gently convex.

In view of the numerous differences observed, *P. conspicuus* may be taken as the type of a new subgenus (or genus ?) *Pachymelopsis*.

ANTHOPHORA Latr.

Anthophora solitaria Rits. (*insularis* Sm.), ♀.

Hair of scutellum black; hair on inner side of basal joint of hind tarsi and brush on apex of outer side splendid red-golden, the other hairs on outer side more or less of the same color.

Anthophora marginata Sm.

The ♀ in my New Mexico tables runs to *A. cleomis* Ckll.; the ♂ has the pubescence like the ♀, and the clypeus white, broadly margined at sides with black, as in *cleomis*. The legs are folded up and hard to see, so I cannot tell whether they agree with *cleomis*; but if the two species are different, they are at any rate extremely close. Another male placed with *marginata* evidently represents a different species; it has ochreous hair on the thorax, not mixed with black.

THAUMATOSOMA Smith.

Thaumatosoma dubouloyi Sm. (T.).

Swan River, Australia. Flagellum thread-like, with the last joint and the apical half of the one before it forming together a flat black disc; antennæ very long; maxillary palpi apparently 2-jointed (possibly 3-jointed), with a thick basal and a narrow apical joint; two submarginal cells, the second very long and receiving both recurrent nervures, one near its base, the other near its apex; b. n. falling short of t. m.; apex of abdomen with a short spine on each side; first ventral segment with a large prominence; first dorsal abd. s. deeply excavated at base, the excavation with a sharp margin; a deep constriction between first and second dorsal segments.

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PSEUDOSMIA Rads.

Two species are in the Museum; they both have the integument black, not at all blue or green; they seem to offer no structural characters of generic importance, and Dalla Torre is apparently correct in regarding the group as a subgenus of *Osmia*.

Pseudosmia jakovlevi (Rads.) ♀.

Transcaspia. Medium sized bee, with white ventral scopa, five narrow but distinct white apical hair-bands on abdomen; very large head and sage-green eyes. Mandibles broad, with three teeth, not counting inner angle; no malar space; antennæ short; b. n. passing some distance basad of t. m.; pulvillus large.

Pseudosmia askhabadensis (Rads.) ♀.

Semsaul, Merw. Much smaller than the last; scopa white, the same white hair-bands, but the first two broadly interrupted in the middle; eyes purplish-brown; basal nervure meets t. m. a little on the outer (apicad) side.

OSMIA Panzer.

Osmia simillima Sm. ♀ (T.).

Scopa black. Is an *Osmia* s. str. sens. Rob., and runs in Robertson's table to *O. major*. The male placed with it (collected by Redman in Nova Scotia) is a *Monilosmia*, and is steel blue, quite different from the dark blue of the ♀. They are certainly different species.

Osmia frigida Sm. ♀ (T.).

Scopa black. Is an *Osmia* s. str. sens. Rob., and also would run to *O. major*, but is a black species with a very large head. The male has third antennal joint only just longer than fourth; middle femur and tarsi simple; apical margin of fifth dorsal abd. s. fringed with pale reddish hair; apical margin of sixth dorsal segment (which is very broad) entire, or very faintly notched medially, curved outwards; of seventh narrow, deeply emarginate but not bidentate (Smith wrongly says entire); venter broad and flat, reddish, first segment not emarginate.

* However, Mr. Titus has examined the mouth-parts of another species of *Pseudosmia*, and considers that they afford good generic characters.

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Osmia chalybea Sm. ♂ (T.).

Is an *Osmia* s. str. sens. Rob. Seventh abdominal segment strongly bidentate; sixth broadly emarginate; joint 4 of antennæ not nearly equalling 2 + 3.

Osmia laboriosa Sm. ♀.

Yarkand, Asia. A peculiar species, with red legs and red and black abdomen; scopa red; anterior margin of clypeus red and produced; wings pale orange basally, and beyond fuliginous; first r. n. joins second s. m. nearer its base than the second does to its apex.

Osmia taurus Sm. ♀ (T.).

Hiogo, Japan (Dalla Torre wrongly says China). Dark æneous, scopa red; clypeus with a tubercle in the middle of anterior margin, and a long process on each side. The male has the antennæ very long, but not moniliform; apex of sixth abdominal segment ordinary and entire, of seventh also entire, but slightly depressed in the middle; apex of first ventral abd. s. entire.

LITHURGUS Berthold.

Typical *Lithurgus* has no pulvillus in either sex; I found none in *L. rufipes* Sm. ♀, *L. rubricatus* Sm. ♀, *L. collaris* Sm. ♂, *L. cornutus* (Fabr.) ♀, *L. gibbosus* Sm. ♀, *L. apicalis* Cress. ♀, *L. atratus* Sm. ♂. In *L. dentipes* Sm. ♂, and *L. dubius* (Sich.) ♀, there is apparently a minute or rudimentary pulvillus. In the females of the Indian *L. dentipes* and *atratus* there is a small but distinct pulvillus. In the males of the North American species, which Fox separated as a genus *Lithurgopsis*, the pulvillus is quite distinct. In the male of the Chilian *L. dubius* there is a long pulvillus. If *Lithurgopsis* is a valid genus, which seems rather questionable, *L. dubius* should be referred to it; and we should apparently have another generic name for the two Indian species, with a pulvillus in the female.

In all the species I examined, the claws were simple in the female, cleft in the male.

L. rubricatus, from Australia, has the hair at apex of abdomen red, as in the American *apicalis;* its maxillary palpi are apparently 5-jointed. *L. collaris*, from Japan, has the hair at apex of abdomen black; *L. cornutus* has it brown-black.

L. gibbosus is easily distinguished from *apicalis* in the female, because it has the facial prominence not at all bilobed.

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Lithurgus dubius (Sichel).

The Chilian *Megachile dubia* Sichel is a *Lithurgus*, as Vachal has pointed out. It has the curious pale grey and black pubescence characteristic of several other Chilian bees (*Megachile chilensis* and *gasperinii*, *Tetralonia atrifrons*). Both sexes are in the Museum, bearing a manuscript name by Philippi, which indicates it as the long-tongued inhabitant of the mountains. The insect is very large and stout, 19–21 mm long; scopa black; pubescence pale grey above, black at sides, on face, beneath, and on apex of abdomen above. The sexes are easily distinguished thus:

♂.—Rather larger and broader, but head not so large and broad; face normal, densely covered with erect black hair End of abdomen densely covered with black hair; apical plate narrow, finger-shaped, concave above; hind femora much swollen; mandibles strongly 3-dentate at apex. Maxillary palpi apparently 3-jointed.

♀.—Rather smaller and narrower, but head larger and rounder; face with a very large and prominent punctured transverse ridge just below the antennæ. Mandibles tridentate, but the third tooth is easily overlooked, and Sichel erroneously described them as bidentate.

My statements regarding the maxillary palpi of *L. dubius* and *rubricatus* must be taken with some reservation, as it was not possible to see them very well.

There is a small character of the venation which may be of some use in dividing the genus *Lithurgus*, as follows:

(1) Second r. n. joining second s m. well before its end. *L. cognatus* Sm. (Australia), *L. dubius* (Sich.), *L. gibbosus* Sm., *L. apicalis* Cress., *L. rufipes* Sm., *L. collaris* Sm.

(2) Second r. n. joining second s. m. at end, but not quite meeting t. c. *L. dentipes* Sm., *L. atratus* Sm.

(3) Second r. n. meeting t. c. *L. cornutus* (Fab.).

DIOXYS Lepel.

The Algerian *D. rufiventris* Lep. is covered with deep fox-red hair, and is not at all like our American insects in color or form. It has the scutellar spine, however. *D. cincta* (Jurine), from Corfu, resembles our species.

EUASPIS Gerst.

Friese and Vachal sink *Parevaspis* as a synonym of this genus. Comparing *Euaspis abdominalis* (Fab.) with *Parevaspis abdominalis* (Sm.), the former is a larger and broader bee; however with the same sort of scutellum, which in *E. abdominalis* is deeply emargi-

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nate, but in *E. bicolor* (Lep.) is not at all emarginate. The venation is the same (also dark wings), except that in the *Parevaspis* the b. n. meets the t. m., while in the *Euaspis* it passes basad of it. It also passes basad in *E. bicolor*, and a little basad in *Parevaspis carbonaria* (Sm.). *Euaspis* ♂ has light face marks, while *Parevaspis* has the face all dark. Both have the second r. n. passing beyond the second s. m., as in *Dianthidium*. *Euaspis* is African, while *Parevaspis* is Asiatic.

Euaspis bicolor has been supposed a synonym of *E. abdominalis* (Fabr.), but the species recognized as *bicolor* by Smith is distinct by the character of the scutellum. Presumably this insect should be known as *africanus* (*Anthidium africanum* Sm.), if it is not the real *bicolor*, though I observe that Vachal retains *africanus* in *Anthidium*.

Euaspis (*Parevaspis*) *carbonaria* Sm. is peculiar for being all black. *Parevaspis abdominalis*, when transferred to *Euaspis*, becomes a homonym, and takes the name *E. polynesia*, Vachal, 1903. Friese, being unaware of Vachal's name, proposed the name *E. smithi* in 1904. Vachal considers that *E. erythros* (Meunier) is a good species, and says that *E. modesta* Grib. appears to be identical with it. Friese, on the contrary, regards *erythros* as a synonym of *abdominalis* (Fab.), and *modesta* a synonym of *rufiventris* Gerst.

CŒLIOXYS Latr.

Abdomen entirely red, legs and tegulæ red ..... **abdominalis** Guér.
Abdomen with the first segment at least largely red; in some the second also wholly or partly red ..... 1.
Abdomen all black ..... 4.
1. Stigma red; lateral teeth of scutellum comparatively broad (Texas). **edita** Cress.
Stigma black or piceous ..... 2.
2. Lateral teeth of scutellum short, hook-like (Cuba) ..... **rufipes** Guér.
Lateral teeth of scutellum more spine-like ..... 3.
3. Larger, ♀ about 18 mm. long (Brazil) ..... **zonula** Sm.
Smaller, ♀ about 12 mm. long (Brazil) ..... **simillima** Sm.
4. Wings hyaline basally, otherwise dark fuliginous, with purple reflections; pubescence of face rufo-fulvous; end of abdomen much prolonged in ♀ (N. China) ..... **fenestrata** Sm.
Wings dark fuliginous; smaller than *fenestrata* (Celebes) .. **fulvifrons** Sm.
Wings not dark fuliginous ..... 5.
5. Females ..... 6.
Males ..... 9.
6. Legs bright red, tegulæ red ..... 7.
Legs much darker, tegulæ black or piceous ..... 8.

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7. Larger ..... **texana** Cress.
   Smaller ..... **insita** Cress.
8. Smaller; last ventral segment broad, shovel-shaped, with hairy edges, not at all notched; penultimate ventral segment with large well-separated punctures all over; legs entirely very dark reddish.
   modesta Sm. (T.).
   Larger; last ventral segment elongated, and notched on each side; penultimate ventral segment minutely roughened, with the punctures shallow, except at the extreme base; second dorsal segment strongly transversely grooved; legs black, tarsi and apex of tibiæ red.
   dubitata Sm. (T.).
9. Femora red, tegulæ red ..... 10.
   Femora black, tegulæ dark ..... 11.
10. Larger ..... **texana** Cress.
    Smaller ..... **insita** Cress.
11. Viewed laterally, the upper apical spines of abdomen appear very short and somewhat directed upwards; tarsi red ..... **rufitarsus** Sm. (T.).
    Viewed laterally, the upper apical spines of abdomen appear moderately long and pointed; tarsi not red ..... **funeraria** Sm. (T.).

ANTHIDIUM Fabr.

Anthidium maculatum Sm. ♂ (T.).

Mexico. Basal joints of middle and hind tarsi light yellow, the small joints dark; first five abd. s. with four yellow spots each, six with two spots, seven without spots; apex of abdomen with long straight parallel blunt spines, the outer ones very much longer than the middle one; subapical lateral spines hooked; mandibles slender, with two large teeth on inner margin.

Anthidium deceptum Sm. ♂ (T.).

Peru (Dalla Torre wrongly says Brazil). Lateral lobes of end of abdomen spine-like.

Anthidium chilense Spinola ♂.

Chile. Legs largely red.

Anthidium coloratum Sm. ♀.

Chile. Markings of abdomen white; tegulæ red; scopa yellowish white.

There are in the Museum two other species of *Anthidium* s. str. from Chile, bearing MS. names by Spinola.

MEGACHILE Latr.

Megachile melanophœa Sm. ♀ (T.).

Scopa entirely rich dark chocolate color.

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Megachile pruina Sm. ♀.

Scopa white, black on last segment and apical half of penultimate one; claws with an acute basal tooth; last dorsal segment with suberect or erect bristles only at sides.

Megachile acuta Sm. ♀ (T.).

This is *M. latimanus.*

Megachile scrobiculata Sm. ♂.

Ohio. Immense spines on anterior coxæ; claws cleft and with an acute basal tooth. Is *M.* (*Ceratias*) *pugnata.*

Megachile bucephala Sm. ♀ (T.).

This also is *M. pugnata.* Scopa cream-color, black on last segment; last two joints of maxillary palpi with some strong bristles; claws with a sharp basal tooth; segments 2–4 of abdomen with no pubescent fasciæ in basal grooves; third tooth of mandibles as in *Ceratias;* cheeks broad, with a great tooth beneath; clypeus normal for *pugnata.* A species from Texas is erroneously labelled *pugnata* in the Museum.

Megachile lanuginosa Sm. ♀ (T.).

Runs to *M. petulans* in Robertson's table. A small species with white scopa, which is slightly yellowish posteriorly, and black on the last segment; posterior ocellus distinctly nearer edge of vertex than to nearest eye; basal joint of hind tarsus about as broad as tibia; there is black hair on vertex and disc of thorax.

Megachile parallela Sm. ♂ (T.).

Claws apically bidentate, with no basal tooth; face densely covered with white hair; hair of vertex and disc of mesothorax dark brown; anterior femora keeled beneath, the inner face of the keel shining ferruginous; anterior tibiæ red beneath; anterior tarsi simple. The type has lost all of abdomen beyond second segment.

Megachile vidua Sm. ♀ (T.).

Posterior half of mesothorax, except at extreme sides, with short black hair; the pubescence has a strong yellowish tint, and the abdomen is shorter than in *M. monardarum.* The clypeus is densely punctured all over, without any well-defined shining median line.

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Megachile frigida Sm. ♂ (T.).

This has the keel on end of anterior femur, as in ♂ *monardarum*; the anterior legs are just the same as in that species, except that *frigida* has the tibiæ much lighter on inner side.

Undoubtedly *vidua* and *frigida* are one species, and *monardarum* is not more than a subspecies of it; in fact, both could very well be regarded as idiomorphs of the European *M. willughbiella*. The female (*vidua*) differs from *monardarum* by the yellowish pubescence, the scape more slender, the clypeus a little different, and the last ventral segment without black hair.

Megachile sedula Sm. ♀ (T.).

S. Domingo. Easily known by its bare, shining, sparsely punctured mesothorax and scutellum, the pubescence of head and thorax black varied with patches of white, and the black abdomen without any traces of bands, but with an extremely bright red ventral scopa; claws with a sharp inner tooth; wings dark fuliginous.

Megachile solitaria Sm. ♀ (T.).

S. Domingo. Scopa black apically, red basally; abdomen with apical half black, the first three segments covered with deep red hair; wings orange, broadly blackish on apical margin; claws with no basal tooth.

Megachile pollinosa Spinola ♀.

Pubescence grey; abdomen banded; mandibles broad; scopa bright rufo fulvous. Chile.

Megachile chilensis Spinola ♂.

Apex of abdomen strongly bidentate, or rather bispinose; mandibles 3-dentate, the inner tooth broad and pointing away from the others. Chile.

Megachile semirufa Sichel.

A Chilian species with abundant rufo fulvous hair, black at apex of abdomen. It is labelled in the Museum with a MS. name by Spinola, referring to its fox-like color. Another Chilian species, also with a Spinolian MS. name, has rufo-fulvous hair like *semirufa*, but it extends only to base of abdomen.

My remaining notes on *Megachile* are in the form of tables, as follows:

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Table A.

This table was devised to show the wide distribution of certain striking types, which do not seem likely to have originated independently from more ordinary forms. In particular, one notices the similarity of certain species on the two sides of the Atlantic in tropical regions. This, and the fact that of all bees *Megachile* is, perhaps, most widely spread on oceanic islands, lend support to the idea that the bees are distributed by means of floating trees containing their nests. It is especially interesting to find that all Hawaiian genera of bees are such as nest in stems or tree trunks, the ground-nesting genera being absent.

Wings orange, the outer margin, more or less, broadly blackish .....1.
Wings with the basal half hyaline, and the apical half fuliginous; metathorax and first abdominal segment covered with white hair (Gambia).
maxillosa Guér.
Wings fuliginous, or at least very dark; insect coal-black..... ....4.
1. Black, with short black hair; scopa black.....2.
Abdomen largely red, or orange-red haired.. .....3.
2. Large, fully 20 mm. long; clypeus with a large median tubercle in ♀ (Borneo).
tuberculata Sm.
Smaller, length about 16 mm.; clypeus without an apical median tubercle in ♀ (Nicobar Is.)..... **fulvipenuis** Sm. (T.).
3. Abdomen with short rust-red hair all over (West Indies).
rufipennis (Fabr.).
Abdomen with only the basal half covered with orange-red hair (Sierra Leone).....**rufipes** (Fabr.).
(*M. cincta* (Fabr.) from Sierra Leone has the abdomen much more like that of *rufipennis*, but the wings are much less orange.)
4. Species of Ceram .....**lachesis** Sm.
Species of India .....**anthracina** Sm.
Species of the United States; abdomen broad; scope black.....5.
5. Punctures of scutellum and hind part of mesothorax larger and more separated; wings darker and longer; second s. m. longer.
xylocopoides Sm. (T.).
Punctures of scutellum and hind part of mesothorax smaller and closer; wings shorter, and not so dark; second s. m. shorter and smaller.
morio Sm.

Table B.—*Mexican species.*

Hair of vertex and thorax above partly or largely black or blackish.....1.
Hair of vertex and thorax above ochreous or fulvous, without black.....6.
1. Male; abdomen ending in two widely-separated spines or teeth; anterior tarsi simple .....**bidentata** Sm.
Females; abdomen broad (not very in *bipartita*) .....2.

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2. Scopa yellow or yellowish, without black, even at apex; hair of abdomen orange ..... 3.
Scopa with some black at apex ..... 4.
3. Last dorsal segment descending; anterior edge of clypeus tuberculate; hind tarsi ordinary; claws with no distinct basal tooth.
bipartita Sm. (T.).
Last dorsal segment not descending; hind tarsi broad and flattened.
candida Sm. (T.).
4. Abdomen without hair-bands; size smaller; scopa yellowish white, black on last segment; a conspicuous band of black hair along hind margin of scutellum, contrasting with a pure white tuft on each side of metathorax ..... **irritans** Sm. (T.).
Abdomen very broad, with well-developed hair-bands ..... 5.
5. Scopa white, black at the sides and on apical segment; tegulæ red; a large tuft of hair, dark brown above and white beneath, on each side behind the wings ..... **breviuscula** Sm. (T.).
Scopa yellowish, black on last two segments (but some yellow basally on the last); tegulæ black; claws with a well-developed inner tooth.
valida Sm. (T.).
6. Legs red; abdominal hair-bands orange; tegulæ red; hair about base of wings orange-fulvous; claws with no basal tooth ..... **azteca** Cress. ♀.
Legs at least largely black; males ..... 7.
7. Larger; middle femora greatly swollen; anterior tarsi with a boat-shaped scale; anterior coxæ with large spines, but no bristles above them; flagellum (except basally) strongly crenulate beneath; claws cleft but with no distinct basal tooth ..... **armata** Sm. (T.).
Smaller; tarsi light yellow; hind tarsi strongly curved; middle tibiæ red (blackened within), with a curious tubercle near apex on inner side; anterior tarsi flattened. canary yellow, the long hairs of the fringe black ..... **candida** Sm. (T.).

Megachile armata is a *Xanthosarus*, very close to *M. latimanus*, but has a good deal of black hair near apex of abdomen above, and the hollow scale of anterior tarsus is fringed with black on inner side, and for basal half on outer.

TABLE C.—*Neotropical species.*

Tegument of abdomen entirely red ..... 1.
Tegument of abdomen not red, or not entirely red ..... 2.
1. Scopa white, black on apical segments (Santarem).
rubriventris Sm. ♀ (T.).
Scopa pale yellowish, becoming fulvous on apical segments (S. Paulo).
pulchra Sm. (T.).
2. Scopa very bright red; abdomen black, without bands (S. Domingo).
sedula Sm. ♀ (T.).
Scopa not so colored; or males ..... 3.
3. Wings orange, with broad blackish outer margins ..... 4.
Wings not so colored ..... 5.

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4. Larger; abdomen covered with short red hair above (West Indies).
rufipennis (Fabr.).
Smaller; apical half of abdomen black (S. Domingo)..**solitaria** Sm. ♀ (T.).
5. Abdomen with patches of yellow hair simulating the bands of *Anthidium* (interrupted midially); scopa black and white; hair of thoracic dorsum black (Parana).....**anthidioides** Sm. ♀ (T.)*
Abdomen not so.....6.
6. Males; abdomen parallel-sided, with narrow hair-bands; anterior tarsi pale yellow, dilated and broadly fringed; anterior coxæ spined.....7.
Females.....8.
7. Larger; anterior tibiæ red, except basally (St. Vincent).
flavitarsata Sm. (T.).
Smaller; anterior tibiæ black, except pale apical margin, and a reddish tinge within; mandibles with an acute tooth on lower margin directed mesad (S. Domingo).....**elongata** Sm. (T.).
8. Legs red; stigma ferruginous (Cuba).....**pooyi** Guér.
Legs black, or practically so.....9.
9. Clypeus with a long pointed curved process on each side; upper half of marginal cell very dark; scopa entirely pale reddish or reddish white (Mendoza, Argentine).....**cornuta** Sm. (T.).
Not so.....10.
10. Hair around base of antennæ bright rufo-fulvous; scope yellowish white in middle, black at sides and on two apical segments; middle of clypeal margin broadly concave (Villa Nova).....**coustructrix** Sm. (T.).
Hair around base of antennæ white; abdomen with very distinct entire hair-bands.....11.
11. Larger; scutello-mesothoracic suture conspicuously white.
deceptrix Sm. (T.).
Smaller; scutello-mesothoracic suture not conspicuously white.
concinna Sm. (T.).

TABLE D.—*Species of Australian Region.*

Abdomen with at least the apical half red, and usually more (less in *alecto*, however).....1.
Abdomen black, with a red or orange-red apical hair-patch, and lateral white patches or stripes; size rather small.....5.
Abdomen above not at all red.....6.
1. Abdomen nude, strongly punctured, entirely red; insect about 8 mm. long (Australia).....**abdominalis** Sm.
Abdomen at least largely hairy or tomentose.....2.
2. Size small, abdomen with only the apical half red (Queensland).**calida** Sm.
Size fairly large, abdomen with little more than the apical two segments red, above and below (Dorey).....**alecto** Sm. ♀.
Size larger; abdomen with more than the apical half red.....3.

* Smith described this as new, but it appears that Radoszkowski, five years earlier, described it under the same name.

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3. Abdomen with first segment above (except excavated area) covered with white tomentum; second and remaining segments red above and below (Murray I.).....**albobasalis** Sm. ♀.
Abdomen without white on first segment.....4.
4. Upper surface of abdomen uniformly and densely covered with orange-red tomentum (Australia).....**mystacea** (Fabr.) Sm.
Basal part of second and third segments with the hair darker and thinner, producing the effect of two dark bands (Australia)...**ustulata** Sm.
5. Face densely covered with long fulvous hair (W. Australia).
erythropyga Sm.
Face densely covered with white hair; the three basal joints of anterior tarsi white and greatly flattened and broadened, the second and third each with a black spot within; fourth and fifth joints slender, red (Swan R.).....**ferox** Sm. ♂.
Face with the surface not concealed by hair; scopa white; clypeus broad and squarely produced; apex of labrum with outwardly-directed spines (Swan R.).....**heriadiformis** Sm.
(The actual type of *heriadiformis* is headless.)
6. Four conspicuous white spots forming a curved line between the wings; abdomen with narrow white hair-bands; hair of face partly black and partly white; claws with a sharp basal tooth; scopa bright red, entirely black on last two segments (New Caledonia).
albomarginata Sm. ♀.
No such white spots; abdomen of the parallel-sided type.....7.
7. Very large; over 20 mm. long; wings deep fuliginous; scopa yellowish white; mandibles with three apical teeth, and a nodule on inner side; clypeus with a great projection on each side; cheeks with a great tooth beneath; claws with a double basal denticle, consisting of a long tooth with a little one mesad of it (Champion Bay).....**monstrosa** Sm.
Smaller, 15 mm. or less; scopa white; females.....8.
8. Wings darkened; base of abdomen with conspicuous white hair; base of antennæ not red (Australia).....**lucidiventris** Sm.
Wings nearly clear; base of antennæ (including all of scape) red; front covered with orange-fulvous hair.....**aurifrons** Sm.

The Indian *M. imitatrix* Sm. very closely resembles the Australian *M. ustulata.*

M. rufiventris Guér., Sm., from Rodriguez, very closely resembles the Australian *M. mystacea,* and is perhaps not separable.

Megachile alecto Sm.

The Museum contains both sexes from Dorey. The male has the abdomen black, with a dull reddish apical area, and no white hair-patches; apex broadly emarginate; lower half of clypeus, and area between antennæ, with yellowish hair, face otherwise black. The type was a male; the female has the marginal cell longer, and the third s. m. longer and lower, and is perhaps not conspecific. It also has darker wings than the male.

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HYLEOIDES Smith.

The species of this genus almost perfectly imitate in color and pattern the Tasmanian Eumenid *Rhynchium mirabile* Sauss. Is it possible that by some accident Smith figured the mouth-parts of the *Rhynchium* for those of the *Hyleoides*? (see Trans. Amer. Ent. Soc., xxix, p. 186).

CAUPOLICANA Spinola (*Megacilissa* Sm.).

Black, with black pubescence; no abdominal bands ..... 1.
Black, with black and white pubescence; three white abdominal bands (Uruguay) ..... **lugubris** Sm. (T.).
Dark, but hairy; thorax with fulvous pubescence ..... 2.
Abdomen bright red; pubescence of thorax black to grey, of face white; claws bifid (S. Domingo) ..... **notabilis** Sm. (T.).
1. Wings fuliginous, shot with purple; face with black hair (Mexico). **luctuosa** Sm. (T.).
Wings only slightly brownish; face with abundant white hair (Chile). **funebris** Sm. (T.).
2. Claws with the inner tooth remote from the end and comparatively short; abdomen strongly metallic (greenish and purplish), with three pale hair-bands; end of marginal cell narrowly obliquely truncate (Mexico) ..... **eximia** Sm. (T.).
Claws bifid, the two teeth long and nearly parallel ..... 3.
3. Abdomen purplish, apical margins of segments 2-4 with very narrow bands of appressed yellowish hairs; tip of marginal cell very narrowly obliquely truncate (Mexico) ..... **tenuimarginata** Sm. (T.).
Abdomen covered with long hair (thinly, except on first segment), without apical bands of appressed hair; apex of marginal cell rounded (Mexico) ..... **clypeata** Sm. (T.).

ANTHOGLOSSA Smith.

Larger; second submarginal cell extremely broad, not contracted above; second r. n. practically straight; hind tibia with knee-plate; pygidial plate large; clypeus densely punctured; mandibles strongly elbowed outwards; abdomen with hair-bands ..... **plumata** Sm. ♀.
Smaller; second submarginal cell greatly contracted above; clypeus shining, with widely separated punctures; mandibles ordinary; hind margins of abdominal segments white, without hair-bands .. **sericea** Sm. ♀.

The male of *A. plumata*, with the same venation as the female, has the hind margins of the abd. segments white like *sericea;* it has the face densely covered with long bright orange red hair, and the scape of antennæ, hind tibiæ and tarsi, etc., red.

A third species, *A. cygni* Ckll., is described in Ann. Mag. Nat. Hist., Sept., 1904.

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PARACOLLETES Smith.

After careful consideration, I feel obliged to unite with *Paracolletes* (which has priority of place) the *Leioproctus*, *Dasycolletes* and *Lamprocolletes* of Smith. The characters of the venation relied upon to separate these genera are in themselves slight, and not constant throughout the several series. Thus, among the species assigned to *Paracolletes* by Smith, we find:

(1) Second r. n. enters third s. m. a little beyond its middle ..... **nitidus.**
(2) Second r. n. enters third s. m. far beyond its middle, but some distance from end ..... **marginatus.**
(3) Second r. n. enters third s. m. very near its end.
crassipes, abdominalis, fervidus.

The Tasmanian *L. chalybeatus* (Erichs.) may be regarded as the type of *Lamprocolletes*. In this insect the b. n. meets the t. m., which is very oblique; the first r. n. joins the second s. m. a little before its middle; the second r. n. joins the extreme tip of third s. m., not really quite meeting the third t. c.; the second s m. is a little narrowed above. There is really nothing generic separating this from such a species as *Paracolletes crassipes*. The description also applies to *Leioproctus imitatus*, except that in *imitatus* the first r. n. joins the second s. m. about its middle, and the second r. n. enters the third s. m. a short distance before its end, in the manner of *Paracolletes marginatus*. *Lamprocolletus fulvus* has the second r. n. joining third s. m. distinctly before its end.

The insects look not unlike *Colletes*, though some (as *Dasycolletes rubellus*) are very *Andrena*-like, and I believe that "*Lamprocolletes*" *peregrinus* is an *Andrena*. The stigma is usually not well developed; the second r. n. is straight; the hind tibia has a knee-plate; the hind spur may be pectinate with rather numerous fine long teeth (as in *Dasycolletes rubellus*), or minutely ciliate, appearing at a glance simple (as in *Dasycolletes metallicus*). *Lamprocolletes cladocerus*, because of its extraordinary antennæ, I have made the type of a genus *Cladocerapis*.

The species may be separated by the following tables:

TABLE A.—Species of *Paracolletes* s. str. (Type *crassipes*).

Abdomen red; first r. n. enters second s. m. slightly before its middle; b. n. meeting t. m. on the outer side ..... **abdominalis** Sm. (T.).
Abdomen not red ..... 1.

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1. Abdomen with a distinct blueish lustre; first r. n. entering second s. m. about or slightly before its middle; b. n. falling a long way short of t. m. **nitidus** Sm.

Abdomen without metallic color; b. n. meeting t. m., or approaching it very closely on the outer side....2.

2. Females; basal joint of hind tarsi much broadened....3.

Males....4.

3. Antennæ reddish, third joint clear red, contrasting; anterior tibiæ and tarsi dark red; first r. n. joining second s. m. a little beyond its middle. **crassipes** Sm. (T.).

Antennæ, including third joint, dark; first r. n. entering second s. m. about its middle....**fervidus** Sm. (T.).

4. Hind margins of abd. segments white, the white edged anteriorly with golden brown; tibiæ and tarsi lively red; anterior margin of clypeus and labrum pellucid cream color; first r. n. entering second s. m. considerably beyond its middle....**marginatus** Sm. (T.).

TABLE B.—Species of *Lamprocolletes* (Type *chalybeatus*).

Abdomen chestnut-red, with a large round black spot on each side of second segment; tibiæ and tarsi red; clypeus shining, with few large punctures; second s. m. small, much narrowed above, receiving first r. n. very slightly beyond its middle; second r. n. entering third s. m. some distance from its end; b. n. meeting t. m. **Paracolletes bimaculatus** (Sm.) (T.).

Abdomen red, very hairy at base, and with thin white hair-bands; no spots on sides of second segment; legs entirely red, front femora with very long hair beneath; antennæ red; flagellum blackish above; face covered with long light fulvous hair; second s. m. broad, receiving first r. n. slightly beyond its middle; third s. m. receiving second r. n. some distance from its end; basal nervure meeting t. m. on outer side....**Paracolletes frederici** n. n. = **Lamprocolletes rubellus** Sm. ♂ (T.); not *Dasycolletes rubellus* Sm.

Abdomen not red, or only reddish from the pubescence....1.

1. Abdomen shining green....2.

Abdomen dark bluish, greenish or purple....4.

Abdomen dark, hairy or nude, but not metallic....9.

2. Size rather large; abdomen with strong crimson tints; hind tibiæ and middle and hind tarsi red; flagellum ferruginous beneath; b. n. just falling short of t. m.; first r. n. entering second s. m. just before its middle; second entering extreme end of third s. m. **Paracolletes cupreus** (Sm.) (T.).

Much smaller....3.

3. Female; hind tibiæ and middle and hind tarsi red; clypeus and supraclypeal area black, rest of face and front green; marginal cell elongated and obliquely truncate; first r. n. joining second s. m. about its middle; second joining third s. m. at its extreme tip; b. n. meeting t. m. **P. amabilis** (Sm.) (T.).

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Male; hind tibiæ not red.

P. amabilis) (Sm.) = **L. metallicus** Sm. (T.).

(*L. metallicus*, being of later date than *Dasycolletes metallicus*, would need a new name if valid; but I am convinced that it is the male of *amabilis*.)

4. Wings with a deep fuliginous cloud, hyaline basally; abdomen dark purple; b. n. meets t. m.; second s. m. very broad, receiving first r. n. about its middle; third receiving second r. n. a long distance before its end. (Yarkand).....**Andrena peregrina** = **Lamprocolletes peregrinus** Sm. (T.).

Wings without a fuscous cloud; second r. n. enters tip of third s. m.....5.

5. Size larger.....6.

Size smaller.....7.

6. Head and thorax green, abdomen purple; b. n. joins t. m.; first r. n. joining second s. m. at its middle; stigma narrow and lanceolate.

Paracolletes plumosus (Sm.) (T.).

Abdomen shining dark green; metathorax transversely carinate.

P. cariuatus (Sm.) (T.).

7. Abdomen deep blue; hind legs partly red.....**P. bicolor** (Sm.) (T.).

Abdomen greenish; hind legs not at all red.....8.

8. Abdomen narrower.....**P. versicolor** (Sm.) (T.).

Abdomen broader.....**P. providus** (Sm.) (T.).

9. Antennæ ramose.....**Cladocerapis cladocerus** (Sm.) ♂ (T.).

Antennæ not ramose.....10.

10. Flagellum orange, largely blackened above, last joint all black, shaped like an incisor tooth, with one surface shining; depressed margins of abdominal segments hyaline; b. n. falling just short of t. m.; first r. n. enters second s. m. just beyond its middle; second r. n. enters third s. m. some distance from its end.

Paracolletes antennatus (Sm.) ♂ (T.).

Antennæ not so.....11.

11. Third s. m. receiving second r. n. very near to or at its end.....12.

Third s. m. receiving second r. n. some distance from its end.....15.

12. B. n. falling a little short of t. m.....13.

B. n. meeting t. m.; first r. n. joining second s. m. about its middle.....14.

13. Larger; first r. n. entering second s. m. not far from its beginning; dorsum of thorax with black hair; face covered with white hair.

P. argentifrons (Sm.) (T.).

Smaller; first r. n. entering second s. m. about its middle; mesothorax shining, little hairy; expanse of wings about 11 mm.

P. uanus (Sm.) (T.).

14. Abdomen pitch-black or perhaps blue-black; stigma and nervures piceous.

P. chalybeatus (Erichs.) ♀.

Abdomen brown-black; stigma and nervures ferruginous.

P. punctatus (Sm.) ♀ (T.).

15. Hair of thorax black and grey, not fulvous or ochraceous.....16.

Hair of thorax fulvous or ochraceous, without black.....17.

16. Distance from first r. n. to second t. c. more than twice distance from second r. n. to third t. c.....**P. obscurus** (Sm.).

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(*P. obscurus* might also be looked for in Section 12, in which case it will run to 14, and will be separated from *P. chalybeatus* by the dark red-brown stigma.)

Distance from first r. n. to second t. c. little more than distance from second r. n. to third t. c.; legs dark red.....**P. cinereus** (Sm.) (T.).

17. Abdomen with abundant fulvous hair .....18.
Abdomen without such hair.....20.

18. Larger; legs red; plumose scopa on hind tibia blackish.
P. fulvus (Sm.) ♀ (T.).
Smaller.....19.

19. Enclosure of metathorax large, indistinctly transversely sericeo-striate; flagellum red; face covered with fulvous hair.
P. ruficornis (Sm.) (T.).
Enclosure of metathorax smaller, shining, with a beaded margin; flagellum not red .....**P. waterhousei** n. sp.
(*P. waterhousei* bears the label "*frontalis* Smith. type," and another label with the remark "clearly not *frontalis*." The description of *frontalis* in Cat. Hym. B. M., under *Leioproctus*, does not at all accord with the present insect, and as the latter is distinct and easily recognized, I name it after Mr. C. O. Waterhouse in recognition of his valuable editorial labors on Smith's posthumously published work.)

20. Abdomen sericeous, hind margins of segments pale golden; first r. n. joining second s. m. about its middle; b. n. falling just short of t. m.; scape red; tibiæ and tarsi red.....**P. venustus** (Sm.) (T.).
Abdomen hairy, the margins of the segments not obviously pallid; first r. n. joining second s. m. far before its middle; b. n. meeting t. m.; scape not red .....**P. aurifrons** (Sm.) (T.).

Three species were not examined: *P. bipectinatus* (Smith, 1856), *P. cristatus* (Smith, 1853), and *P. irroratus* (Smith, 1853).

TABLE C.—Species of *Dasycolletes* (Type *metallicus*).

Abdomen red; first r. n. joining second t. c.; second r. n. meeting third t. c.; hind spur pectinate with numerous fine long teeth.
Paracolletes rubellus (Smith).
Abdomen not red .....1.

1. Only two submarginal cells (the second t. c. wanting); stigma large; clypeus covered with silvery hair; supraclypeal area nude, shining brassy.
P. vitrifrons (Sm.) ♂.
Three submarginal cells; first r. n. joining second s. m. not beyond its middle .....2.

2. About 7 mm. long, with a dark purple abdomen; second s. m. strongly contracted above (New Zealand).....**P. purpurens** (Sm.) ♂.
At least 9 mm. long.....3.

3. First r. n. joining second s. m. distinctly before its middle.....4.
First r. n. joining second s. m. near or at the middle; no such patches on mesothorax as occur in *humerosus*.....5.

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4. A large patch of short moss-like bright ochraceous hair on each side of mesothorax (Australia).....**P. humerosus** (Sm.)
No such patches on mesothorax (New Zealand).. ...**P. confusus** (Ckll.).
5. Apex of abdomen with bright red hair.....6.
Apex of abdomen with darker or black hair.....7.
6. Stigma dark brownish (New Zealand).....**P. hirtipes** (Sm.).
Stigma light yellowish or honey color.
P. fulvescens (**Lamprocolletes fulvescens** Sm.)
(*fulvescens* seems to be only a variety of *hirtipes*.)
7. Abdomen dark purplish tinged; rather smaller (New Zealand).
P. vestitus (Sm.).
Abdomen greenish tinged; rather larger; hind spur minutely ciliate (New Zealand).....**P. metallicus** (Sm.).
Abdomen black; larger than *vestitus* (New Zealand)....**P. boltoni** (Ckll.).

TABLE D.—Species of *Leioproctus* (Type *imitatus*).

Abdomen red, like that of *P. rubellus;* a dense black apical fimbria; first r. n. joining second s. m. much before its middle; second r. n. joining third s. m. before its end; area with a strong transverse keel (Australia).
P. fimbriatus (Sm.).
(*P. fimbriatus* has essentially the venation of *P. confusus*, except that the stigma is obsolete, whereas in *confusus* it is narrow but fairly well developed; it is also fairly well developed in *imitatus*.)*
Abdomen not red ....1.
1. Abdomen, also head and thorax, dark blue; caudal fimbria bright orange-fulvous; first r. n. joins second s. m. much before its middle: size medium; area of metathorax shining.....**P. elegans** (Sm.).
Abdomen strongly green; area smooth and shining; runs in the *Dasycolletes* table straight to *metallicus*, differs by its larger size (over 13 mm. long), darker wings, and hair on hind tibiæ white on inner and black on outer side, the colors sharply contrasting uniformly paleish in *metallicus*) (Swan R.) ....**P. vigilans** (Sm.).
Abdomen faintly æneous or purplish; first r. n. joining second s. m. at middle; area not transversely striate (New Zealand).
P. imitatus (Sm.).

P. frontalis (*Leioproctus frontalis*) I have not seen. There are two specimens marked "probably *frontalis*," which represent a species near to *P. purpureus*, but larger. It does not seem likely that they are the real *frontalis*, as the abdomen shows no sign of green.

It will be seen from the characters cited in the tables that the so-called genera include most diverse species, and I find myself unable to recognize any common bond between those of each group, which would justify their generic segregation.

* The original description of *P. fimbriatus* gives no locality, but the specimen is labelled Australia. A male placed with *fimbriatus* in the Museum does not belong to it, but is an *Halictus*.

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It is possible that more than one genus may later be recognized among the species I here call *Paracolletes*, but in order to do this it will be necessary to formulate new generic characters, grouping the species in quite a new manner. This may become necessary or useful when more species are known; the Museum now contains quite a series of undescribed species, and no doubt very many more await discovery.

HALICTUS Latr.

Halictus creberrimus Sm. ♀ (T.).

Hind spur pectinate with few teeth; hind tarsi fulvous, contrasting in color with the brown tibia and femur; base of metathorax finely longitudinally wrinkled; mesothorax dull, with close minute but quite distinct punctures; abdomen quite hairy; third s. m. large, much larger than second. In Robertson's tables it seems to run to *cressoni*, or rather to *versatus* or *coreopsis;* it really runs nearest to *coreopsis*, but I should hardly call the mesothorax sparsely punctured, it is quite closely so. The brown pubescent abdomen would agree with *versatus*. Compared with *H. ruidosensis* it differs by the much smaller punctures of mesothorax; the narrower, broad-oval head with narrower face; the lively ferruginous tegulæ; the lack of a shining ridge bounding mesothoracic enclosure; the sepia stigma; the brown, hairy abdomen, etc.

Halictus inconspicuus Sm. ♀ (T.).

Very small, expanse of wings only about 7 mm.; hind spur of hind tibia pectinate with a few large teeth; stigma pale dull brown; tegulæ shining-reddish testaceous; area minutely roughened, with only obscure basal wrinkles laterally; abdomen dark brown; third s. m. ordinary, its outer nervure faint. In Robertson's tables seems to run nearest to *versatus*.

Halictus coriaceus Sm.

This is the species we have always so identified.

Halictus crassicornis Kirby ♀.

Nova Scotia (Redman); det. Smith. Is an *Evylæus*, and in Robertson's table appears to run closest to *foxii*. Hind spur pectinate with four or five teeth; head and thorax black, abdomen very dark reddish; tegulæ dark reddish; stigma honey color; metathorax truncate, no defined area, but basal region rather coarsely wrinkled all over; mesothorax dull, with minute punctures.

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Halictus farinosus Sm. ♀ (T.).

A large banded species; belongs to Robertson's *Halictus* s. str., and runs out of his table because legs are not ferruginous, except middle and hind tarsi, and small joints of anterior tarsi, and the hind spur is finely serrate. Stigma and nervures ferruginous; wings with a decided though not strong reddish tint; third s m. very broad; the four dull (yellowish or greyish) white abdominal hair bands are very broad and distinct, the region between the bands is dull, because pubescent; mesothorax closely and strongly punctured; clypeus shining, with quite widely separated punctures; base of metathorax minutely rugose; tegulæ large, with a testaceous spot broadly surrounded by dark brown.

Halictus pectoralis Sm. ♀ (T.).

Florida. Runs to *pectoralis* in Robertson's table. Area shining, with large irregular wrinkles; hind spur with six teeth, the basal ones very large; stigma rather dark reddish-brown; second and third abd. segments with lateral subtriangular patches of whitish pubescence. Compared with *H. pectoraloides*, it is a broader, more robust insect, with the area much more coarsely wrinkled, and lunate rather than hemispherical in outline, much shorter than semicircular in an anteroposterior direction; the mesothorax also is much duller and more punctured.

Halictus confusus Sm. ♀ (T.).

Wings very yellow; stigma very pale honey color; third s. m. very large, fully twice as large as second, but its outer margin without a distinct double curve; outer veins not perceptibly weaker than inner; b. n. with the bend very strong; hind spur of the serrate type, but the teeth rather long; head and thorax dark blue-green; clypeus black, supraclypeal area brassy; abdomen without hair bands, hind margins of segments testaceous; cheeks normal; tegulæ testaceous, with a piceous cloud. The first abd. s. seems to have a barely perceptible greenish lustre. Goes to *Halictus* s. str. in Robertson's tables. The above notes are from the type; the series consists of two species mixed.

Halictus imitatus Sm. ♂ (T.).

Very small; head and metathorax very dark green; mesothorax and scutellum with some purple reflections, but they seem to be a stain, produced artificially in some way; the abdomen might fairly

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be described as subclavate; the tibiæ, especially the hind ones, are dark, with base and apex light red; third s. m. quite large, with its outer nervure quite strong. Smith's expression "rufo-fuscous" does not well describe the abdomen; it is practically black, with the hind margins of the segments reddish. Of Robertson's species it seems nearest to *cressoni*. It is a considerably smaller insect than *zephyrus*, and has a much darker abdomen.

Halictus pilosus Sm. ♀ (T.).

Runs to *pilosus* in Robertson's tables; second s. m. very broad; hind spur with about five long spines; third and fourth abd. segments entirely covered with ochraceous felt.

Halictus lævissimus Sm. ♀ (T.).

Hind spur with very few long teeth; b. n. strongly bent; third s. m. quite large, broad above; outer nervures weak as in *Chloralictus;* abd. segments with basal lateral hair-patches on 2 and 3, and 4 and 5 pruinose-hairy all over, but not closely felted as in *pilosus;* stigma rather large, pale dull honey color; abdomen with a strong reddish tinge; on disc of second segment, at least, one can see numerous very minute and delicate punctures; head and thorax dark blue-green, the mesothorax almost indigo; area rather well-defined, semilunar, with longitudinal wrinkles; head fairly broad. Seems not to be in Robertson's tables.

Halictus rhododactylus D. T. (*fulvipes*, Sm.) ♀.

Remarkable for the wholly fulvous hind tibiæ and tarsi, contrasting with the dark brown femora; the other tarsi are fulvous, but their tibiæ are clouded with dark brown; hind spur with few long spines; metathorax truncate, its basal area minutely rugoso-cancellate; abdomen quite hairy; venation of *Chloralictus;* second s. m. quite large.

Halictus capitosus Sm. (T.).

Cheeks produced to a large tooth beneath; wings strongly yellowish. A *townsendi* like form.

Halictus discus Sm. ♀ (T.).

Quite large, about 10 mm. long, and robust. In Robertson's tables it runs to *Lasioglossum*, and the metathorax has the truncation with the sharp edge of *fuscipennis*. From type *fuscipennis*, it differs entirely by the abdomen very much broader at base; wings

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not nearly so dark, and not so long; base of metathorax with no enclosure, but shining, with very strong longitudinal ridges; the smooth shiny mesothorax, with large widely separated punctures, etc. The hind spur has short saw like teeth. Tegulæ shining, dark, with a red spot; stigma fulvo-ferruginous, and remarkably small; third s. m. rather narrower than in *fuscipennis;* abdomen shining, with strong well separated punctures; the depressed apical portions are also punctured; bases of segments 2-4 with dull white hair-bands. Certainly very close to *H. zonulus;* of the latter I found only males in the Museum.

Halictus nymphalis Sm. ♀ (T.).

Small, only about 5 mm. long; in Robertson's tables runs to *testaceus.* Hind spur with few long spines; apical half of abdomen largely fuscous, and very hairy; basal half shining reddish-testaceous; stigma light honey color; area distinct, very finely rugose-wrinkled; mesothorax yellowish-green, closely and distinctly punctured; all the knees pale reddish.

Halictus zephyrus Sm. ♂.

Much larger than *namphalis;* length about 6½ mm.; abdomen shining dark brown, with a greenish reflection, especially on first segment. Runs to *zephyrus* in Robertson's tables.

Halictus similis Sm. ♀ (T.).

A broad thick-set bee, with third s. m. not elongated; abdomen with basal bands, mainly developed at sides, on segments 2 and 3; hind spur serrate. Appears to be a *Lasioglossum*, sens. Rob., and has metathorax sharply truncate; basal enclosure not distinctly defined, and with numerous strong longitudinal keels. The first abd. s. is minutely but very distinctly punctured all over. Stigma very dark brown; apical fimbria of abdomen light fulvous; mesothorax closely punctured.

Closely allied to *H. discus*, but smaller, metathorax much less shiny, stigma darker, etc. It cannot be *H. truncatus*, because of punctured first abd. s., and hind spur without long teeth; and it is not *H. arcuatus*, because of sharply truncate metathorax.

Halictus agilis Sm. ♂ (T.).

Is a true *Halictus*, very distinct from any U. S. species known to me. Third s. m. quite twice as big as second, but very broad at top, and outer side without any distinct double curve; b. n. not

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abruptly bent; head, thorax and abdomen yellowish-green; abdomen with apical hair bands on segments 2–5, and basal ones on 2 and 3 at least; tibiæ and tarsi, and most of middle and anterior femora, red, but hind femora dark; abdomen broad basally.

Halictus exiguus Sm. ♀ (T.).

Venation of *Chloralictus;* hind spur with few long spines; head and thorax yellowish-green, head of the broad type, cheeks broad. The most obvious distinctive character is the smooth and shining mesothorax, the basal area slightly rugoso-plicate towards the base.

Halictus erraus Rits. (*vagans*, Sm.) ♀ (T.).

Second s. m. broad; stigma very pale honey; hind spur with three teeth, the first stout and spine like, the second a flattened and rounded lamina, the third a mere rudiment; abdomen very broad, yellowish green, hind margins of segments broadly testaceous; base of metathorax minutely rugose-wrinkled, with no large plicæ. Eyes, etc., of typical *Halictus*.

Halictus provideus Sm. ♀ (T).

Hind spur with about 5 spines. Is an *Evylæus* with a large broad head, facial quadrangle very much broader than long. Third s. m. strongly convex on outer side; cheeks broad and subquadrate; mesothorax shining, with very sparse punctures; first abd. s. very shining, impunctate.

Halictus hesperus Sm. ♀ (T.).

Eyes, etc., of *Halictus;* head broad, facial quadrangle about square; hind spur with three broad teeth; abdomen strongly yellowish-green, the pale ochraceous hair-bands basal and apical; third s. m. much longer than second, but very broad above, with outer margin little curved.

Halictus desertus Sm. ♀ (T.).

Hind spur serrate; second and third s. m. very broad, third without any distinct double curve on outer margin; area merely minutely granular; looks much like *coriaceus* or *politus*, but is smaller, stigma browner—not nearly so yellow, wings not yellow like *politus*, etc.

H. politus (*schenckii*, Rits.) has hind spur serrate, but the teeth are rather longer.

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The following account of the Halicitines of Chile, as represented in the Museum, is offered because of the interesting characters they present. A few bear Spinolian names which have never been published; in two cases these names would be homonyms if published now.

Rhopalictus gayi* (*Halictus gayi*, Spinola) ♀.

Metallic blue; face broad, eyes not emarginate; no facial foveæ; antennæ placed in large hollows, between which is a keel; prothorax normal; parapsidal grooves distinct; three impressed lines on anterior middle of mesothorax; no floccus at base of hind legs; abdomen broad, narrowing about equally to base and apex; no pygidial plate; extreme apex of abdomen with bright fulvous hair and a distinct rima; hind spur stout but perfectly simple; b. n. only very slightly curved, meeting t. m.; marginal cell with pointed end away from costa; second s. m. greatly narrowed above; first r. n. entering second s. m. at its end; first s. m. not longer than third, either on marginal nervure or below; stigma dark and fairly large.

This certainly cannot remain in *Halictus;* it has rather the appearance of an Andrenid, but is by no means an *Andrena.* It does not seem close to the species ordinarily placed in *Corynura.* Dalla Torre cites "*Halictus* (*Corynura*) *gayi* Spinola, Gay: Hist. fis. Chile, Zool. VI. 1851, p. 208, n. 10, and p. 301, n. 1." The original description, however, calls it simply *Halictus gayi,* nothing being said about *Corynura.*

Paragapostemon mutabilis (*Halictus mutabilis*, Spinola) ♀.

Head, thorax, and basal half of abdomen shades of peacock-green and purple; abdomen bright red, the colors like those of *H. placidus.* Hind spur with a large blunt tooth and a lamina; eyes fairly emarginate; basal nervure strongly bent. Greatly resembles *placidus.* See also Vachal, Misc. Ent., 1903, p. 96.†

* Mr. J. D. Alfken (Rev. Chil. Hist. Nat., 1904, p. 141) refers *Halictus gayi*, Spin., *H. posticus*, Spin., and *H. gayatinus*, Spin., all to *Ceratina.* They do not look like species of *Ceratina*, and it had not occurred to me to refer them there. The mouth-parts I was not able to examine. In the light of Mr. Alfken's statement, and considering the precisely *Ceratina*-like grooves on the thorax of *H. gayi*, I believe that these insects (certainly out of place in *Halictus*) are Ceratinids, but I should think that they must represent a genus distinct from *Ceratina.*

† Vachal does not cite a type for *Paragapostemon: P. podager* (*Halictus podager* Vach.) may be taken as the type.

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Agapostemon placidus (*Halictus placidus*, Sm.) ♀.

Abdomen red, head and thorax dark blue shaded with purple; eyes moderately emarginate; first r. n. joins second s. m. near its end.

Agapostemon emarginatus (*Halictus emarginatus*, Spinola) ♂.

Legs yellow; apex of abdomen strongly emarginate. See also Vachal, Misc. Entom., 1903, p. 121.

The remaining species are left for the present in *Halictus*, although they are for the most part not strictly of that genus.

Halictus rubellus Haliday ♀.

Head and thorax black; abdomen largely dark red; eyes deeply emarginate; metathorax truncate, base shining, neither rugose nor plicate; hind spur simple; b. n. strongly bent, falling some distance short of t. m.; third s. m. very large; first r. n. joining second s. m. at its extreme end.

Halictus posticus Spinola ♀.

Eyes emarginate; base of metathorax neither plicate nor rugose; abdomen black with the apex red; stigma extremely large; third s. m. large, but not nearly so long as first; b. n. strongly but not abruptly bent, falling a little short of t. m.; hind spur simple.

Halictus gayatinus Spinola ♀.

A small black species, with very large stigma, and third submarginal cell greatly narrowed above.

Halictus chilensis Spinola ♀.

A magnificent species; first three segments of abdomen jet black, with their hind margins broadly shining light yellow, reminding one of some species of *Nomia*. Fourth segment tinged with purple and green. Head and thorax very dark blue; marginal cell and beyond with a dark fuscous cloud; eyes deeply emarginate; tibiæ and tarsi red; base of metathorax neither plicate nor distinctly rugose.

Halictus proximus Spinola ♀.

Head and thorax green; mesothorax splendid peacock green; scutellum clouded with rosy-purple; abdomen very dark purple, with white hair-patches at sides of bases of segments two to four; hind spur with three large teeth.

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Halictus maculosus Smith ♀.

Large, black, the white laterobasal hair-patches of abdomen very distinct; legs mainly bright red; third s. m. much shorter than first.

Halictus n. sp. Spinola.

A real *Halictus*, but with the eyes unusually emarginate; third s. m. very large; its outer side strongly angled; wings very yellow basally. Has the appearance of the group of *coriaceus*.

Halictus n. sp. Spinola ♀.

Smallish, black, mesothorax faintly greenish; laterobasal hair-patches of abdomen very distinct; stigma large, dark brown.

Halictus n. sp. Spinola ♀.

Small, shining black; second s. m. strongly narrowed above; stigma large, dark brown; the mesothorax shining, with scattered punctures.

H. chloris, Spinola, and *H. nigromarginatus*, Spinola, both belong to *Augochlora*.

Vachal (Misc. Ent., 1903–1904) has recently described the following Halictines from Chile, placing them all in the genus *Halictus*:—*Agapostemon pissisi* (Vach.),* *Paragapostemon nigrocæruleus* (*Halictus nigrocæruleus*, Spinola), *P. dolator* (Vach.), *P. purpurissus* (Vach.), *P. scitulus* (Vach.), *P. cuprellus* (Vach.), *P. iodurus* (Vach.), *P. atrinodis* (Vach.), *P. dilutior* (Vach.), *Augochlora prothysteres* (Vach.), *A. notialis* (Vach.).

AUGOCHLORA Smith.

Mr. Vachal divides this genus (which he regards as part of *Halictus*) into three groups:

Hind margins of first two abdominal segments ciliate with short hairs; hind spur of ♀ pectinate or spined.....VIBRISSATI.
Hind margins of first two abdominal segments not ciliate.
Hind spur pectinate or spined.....SERICEI.
Hind spur not pectinate or spined.....OXYSTOGLOSSI.

The sections Vibrissati and Sericei have constituted the subgenus *Augochloropsis*. Oxystoglossi has been regarded as typical *Augochlora*, but it includes the genus *Oxystoglossa*, Smith. Smith's *Augochlora* included all three sections, but his first species (*A. diversipennis*) belongs to Vibrissati. Both *Augochlora* and *Oxystoglossa*,

* The Chilian locality of this is doubtful.

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according to the descriptions, have the first r. n. meeting the second t. c.; the latter genus has an extremely long tongue.

Species which have been referred to *Augochlora* differ in venation, as follows:

(1) First r. n. entering middle (or near) of second s. m.: *Corynura briseis* (Sm.).
(2) First r. n. entering end (or near) of second s. m.
  (a) *Halictus nanus* (Sm.) and *H. aspasia* (Sm.).
  (b) *Corynura titania* (Sm.).
  (c) Sericei, with only three spines on hind spur: *A. chloris* and *aurora*.
  (d) Oxystoglossi: *A. alcoyne*.
(3) First r. n. meeting second t. c. (typical venation of *Augochlora*).
  (a) Group uncertain: *A. festivaga*.
  (b) Sericei or Oxystoglossi (♀ unknown): *A. daphnis*.
  (c) Sericei: *A. chryseis* and *deidamia*.
  (d) Vibrissati: *A. atropos, diversipennis, calypso, paphia, viridana, flammea*, and n. sp.
(4) First r. n. entering beginning of third s. m.
  (a) Vibrissati: *A. læta* and *fervida*.
  (b) Sericei: *A. refulgens*.
  (c) Oxystoglossi: *A. feronia*.

These characters of the venation are not always to be relied upon, as variation was noticed in *A. radians* and *vesta*. At the same time, the number of Vibrissati in the third group must be considered significant.

(A) Vibrissati.

Augochlora berenice Sm. ♀ (T.).

Hind spur with five long teeth; abdomen with much purple lustre; scutellum closely punctured, the punctures of one size. In my Phil. Acad., 1900, paper it runs to the group of *monochroa*, etc.; it agrees with the description of *monochroa*, except that the sides of metathorax near the truncation are densely covered with punctures. From *heterochroa* it is distinguished by the scutellum. My supposed *A. berenice* from Brazil (t. c., p. 357) is not that species; it should be described in detail, and given a name. It is now in the Carnegie Museum at Pittsburg.

Augochlora læta Sm. ♀ (T.).

Ega. A small species; first r. n. joining base of third s. m.; hind spur with four or five long spines; abdomen broad and convex, yellowish-green; segments one and two delicately ciliate, but the cilia largely concealed by the general hoariness; anterior tibiæ a beautiful golden green.

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Augochlora calypso Sm. ♀ (T.).

Hind spur with many long spines; vibrissæ very conspicuous, orange, failing in middle of first segment; wings strongly yellowish; marginal cell appendiculate, and having the appearance of being very narrowly truncate at apex; first r. n. joining second t. c.; second s. m. broad, about square; inner orbits narrowly edged with blue; disc of scutellum with widely separated punctures on a shining ground; abdomen with a golden lustre; all the tarsi dark ferruginous. In my table runs to *smithiana*, but is not that species. Because of the scutellum, etc., my supposed *A. calypso* (Pr. Phil. Acad., 1900, p. 364) is not that species. It must be described in detail, and given a new name. The two supposed subspecies of *calypso* (l. c.) must be treated as species, *Augochlora cupreotincta* (Ckll.) and *A. eucalypso* (Ckll.).

Augochlora viridana Sm. ♀ (T.).

Brilliant green, with purple lights; abdomen quite hairy, and segments one and two with a very conspicuous marginal band of pale orange cilia; area of metathorax slightly roughened, not striate; first r. n. meeting second t. c.; hind spur with numerous long spines. In Vachal's tables seems to run to *A. chorisis* (Vach.).

Augochlora flammea Sm. ♀ (*Halictus anthrax* Vach.).

In Vachal's tables runs to *anthrax*, with the description of which it exactly agrees. Head, thorax and abdomen crimson shaded with greenish-golden; abdomen quite hairy, with fulvous hair; hind margins of segments one and two long-ciliate, but the cilia not very conspicuous on account of the other hair; hind spur with four spines; first r. n. meets second t. c.; area short, with little longitudinal (antero-posterior) ridges; upper part of sides of metathorax nude, smooth and shining.

Augochlora n. sp., Smith ♀.

Para. This bears an unpublished name; it was perhaps considered part of *A. hebescens*. Green, head and thorax with blue shades, abdomen with golden ones; ciliar bands on margins of segments one and two pale yellow, and extremely distinct and conspicuous; hind spur with about five spines; area small, merely rugose; first r. n. meets second t. c.; third s. m. at least twice as broad as second. Runs in my table to the "*calypso*" group.

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Augochlora paphia Sm. ♀.

Santarem. Hind spur with eight long spines; cilia of segments one and two fulvous, wanting in middle of one, otherwise very distinct; head broad; scutellum with two purplish spots; wings strongly yellowish; first r. n. meets second t. c.

Augochlora atropos Sm. ♀ (T.).

Very peculiar; head, thorax and first abdominal segment black, with at most vague suggestions of green; rest of abdomen green, with golden tints, and even some crimson tints on third segment; vibrissæ orange, distinct; hind spur with numerous long spines; first r. n. meeting second t. c.

Augochlora diversipennis (Lep.) Sm. ♂.

Shaped rather like a ♀; golden-green, vibrissate on hind margins of abd. segments one and two with orange hairs; antennæ dark, with third joint reddish yellow and swollen anteriorly; anterior margin of clypeus yellow; sides of metathorax very closely punctured; tarsi yellow; first r. n. meets second t. c. Does not agree with any of the species in my Phila. Acad., 1900, paper.

Augochlora electra Sm. ♂ (T.).

Antennæ dark, without any red joint; all the tarsi yellow; area shining, quite smooth, without punctures or wrinkles; hind margins of segments one and two ciliate.

Augochlora bucephala Sm. ♀ (T.).

Hind spur with six spines.

Augochlora artemisia Sm. (T.).

At first sight appears not vibrissate, but there are remains of what must have been a ciliate fringe; first r. n. reaching extreme base of the large third s. m.; scutellum extremely densely punctured. The unique type has both hind legs gone.

Augochlora vesta Sm. ♀ (T.).

Abdomen quite crimson; hind spur with long spines; hind margin of second segment ciliate with orange hairs, but on first the fringe is not apparent. Other specimens labelled *vesta* are from Mexico.

Augochlora cupreola (Ckll.).

My *A. vesta*, var. *cupreola*, must stand as a distinct species.

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Augochlora ignita Sm.
Abdomen strongly punctured.

Augochlora fulgida Sm. ♀.
Vibrissate, but rather indistinctly; hind spur with numerous long teeth; area small, dull, contrasting with the shining region beyond; vertex shining purple in some lights.

Augochlora splendida Sm. ♀ (T.).
Conspicuously vibrissate; hind spur with long spines.

Augochlora viridula Sm. (T.).
Considered to be the same as *lucidula*. Hind and middle tarsi with the first joint light yellow, the others brown.

Augochlora lucidula Sm. (T.).
Vibrissate, but the cilia pale and delicate.

Augochlora fervida Sm. (T.).
Conspicuously vibrissate, the cilia pale; first r. n. enters base of third s. m.

The following seven vibrissate species were kindly sent by Mr. Vachal for examination and comparison:

(a) Abdomen red or reddish.

Augochlora æritalis (*Halictus æritalis* Vachal) ♀.
From this species (1) *A. vesta* differs by the duller abdomen, all crimson, including first segment, and area quite different; (2) *A. ignita* differs by its duller, more strongly punctured abdomen, the purple-blue tints on thorax, etc.; (3) *A. acidalia* differs by being larger, with a strong blue shade on mesothorax.

Augochlora multiplex (*Halictus multiplex* Vachal) ♀.
No blue or purple tints on thorax; first abd. segment largely golden-green. This combination of characters separates it at once from *vesta*, *ignita* and *acidalia*.

Augochlora radians (*Halictus radians* Vachal) ♂.
The thorax has rather bluish tints. It is like a Mexican *vesta*, but the middle of mesothorax is more closely punctured (in *vesta* the punctures are sparser in middle). In *vesta* the first r. n. meets second t. c., or even enters third s. m.; in *radians* the first r. n. enters second s. m. or meets second t. c. (the two sides different in

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specimens of each!). Certainly very near *vesta*, but apparently separable.

Augochlora notophos (*Halictus notophos* Vachal) ♀.

Abdomen not nearly so red as the others; seems nearest to *acidalia*, but much smaller.

(b) Abdomen not red or reddish.

Augochlora terrestris (*Halictus terrestris* Vachal) ♀.

Has a long face.

Augochlora chorisis (*Halictus chorisis* Vachal).

Looks superficially like *A. regina*, but the abdomen of *chorisis* is less blue and much more strongly punctured. Vachal queries whether it may be *A. cuprea;* I fail to find a specimen of *cuprea* in the Museum.

The types of *A. cuprea* and a few others were in the collection of Mr. W. W. Saunders, and are supposed to be in the Hope Museum at Oxford. I went to the Hope Museum expecting to see them, and was shown the collections by Commodore Walker (Professor Poulton being away), but I failed to find any trace of them.

Augochlora cubiceps (*Halictus cubiceps* Vachal) ♀.

Close to *A. artemisia*, but differing thus:

A. cubiceps.	*A. artemisia.*
Abdomen yellowish-green, with golden tints.	Abdomen bluish-green, with purple tints
Vibrissæ strongly orange.	Vibrissæ not strongly orange.
Vertex without such purple tints.	Strong purple tints on vertex.
Wings not so stained.	Wings strongly stained with reddish.

The form of the head is the same in both. *A. cubiceps* looks like *A. paphia*, but the sculpture of area is quite different.

(B) Sericei.*

Augochlora deidamia Sm. ♂ (T.).

S. Paulo. Abdomen broad, bluish green with purple reflections; not vibrissate; the first two segments strongly punctured; mesothorax with well separated punctures, and a very strong crimson lustre; sides of anterior margin of prothorax presenting a prominent keel; first r. n. meeting second t. c.; area very short, with little ridges; hind spur with long spines.

Augochlora chloris (*Halictus chloris* Spinola) ♀.

Abdomen broad, peacock green, with beautiful blue and golden tints; no vibrissæ; face broad, peacock green, vertex shining pur-

* According to the "elimination method," this would be typical *Augochlora*.

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ple; first r. n. joining second s. m. at its apex; eyes deeply emarginate; hind spur with three spines.

Augochlora chryseis Sm. ♀ (T.).

First r. n. meets second t. c.; hind spur with three spines; head and thorax dark blue, becoming a little greenish on hind part of thorax; area strongly striate; anterior middle of mesothorax dull and granular between the punctures; abdomen dark green, no vibrissæ; inner orbits concave, but not strongly emarginate.

Augochlora aurora Sm. ♀ (T.).

Hind spur with only three spines, but these sharp; head and thorax dark blue green; abdomen yellowish-green, with a yellowish, almost pollinose, pubescence; no vibrissæ; metathorax sharply truncate, area very closely and finely striate; mesothorax extremely rugose; eyes only moderately emarginate; first r. n. joining second s. m. a short distance before its end; abdomen broad at base as usual. The mesothorax has a sharp edge in front, overlapping prothorax; tubercles keeled and (seen from above) pointed. Does not agree with anything in Vachal's tables.

Augochlora refulgens Sm. (J. of Entom., 1861).

Brazil. Mesothorax with a strong crimson lustre; abdomen green, with a blue lustre; hind spur with numerous long spines; hind margins of segments one and two not at all ciliate, except sides of two very slightly and inconspicuously; first r. n. enters extreme base of third s. m.

Augochlora pandora Sm. ♀ (T.).

Hind spur with five teeth; area rugose; hind margins of abd. segments one and two narrowly darkened, not ciliate.

Augochlora graminea ("Fabr.") Sm.

♀. Hind spur with six spines; runs to *chapadæ* in my table in Pr. Phil. Acad., 1900, p. 361. The ♂ has the last joint of antennæ hooked, as in *binghami*.

(C) Oxystoglossi.

Augochlora regina Sm. (T.) ♀.

No trace of vibrissæ; area closely striate; hind spur not pectinate. Much larger than *Oxystoglossa decorata*, but seems allied.

Augochlora metallica (Fabr.) Sm.

A small species with black hind margins to segments; punctures of mesothorax extremely close. Should be compared with *A. iheringi*, to which it is at least very closely allied.

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Augochlora thalia Sm.

Not at all vibrissate.

Augochlora festiva Sm. ♀ (T.)

Hind spur not pectinate; not at all vibrissate; wings yellowish; hind margins of abd. segments very narrowly black.

Augochlora gratiosa Sm. (T.)

Not vibrissate; hind margins of abd. segments not black.

Augochlora alcyone Sm. ♀ (T.).

S. Domingo. Abdomen blue green and purple, hind margins of segments very narrowly black; no vibrissæ; hind spur curved, simple; first r. n. joining second s. m. at its apex; stigma and nervures dark brown; abdomen more parallel sided than that of *Oxystoglossa decorata*. Looks like a blue *Chrysis*.

Augochlora feronia Sm. ♀ (T.).

No vibrissæ; hind margins of abd. segments black; first r. n. joins base of third s. m; hind spur curved, simple; wings yellowish-dusky; punctures of mesothorax very close.

It is impossible to say whether the following belongs to Sericei or Oxystoglossi, in the absence of the female:

Augochlora daphnis Sm. ♂.

(The specimen has lost its head.) Hind margins of abdominal segments black; no vibrissæ; scutellum with widely separated but strong punctures on a shining ground; mesothorax strongly and very closely punctured, but the punctures distinct; wings almost clear; middle and hind femora with a good deal of green; first r. n. meeting second t. c.

ANDRENOPSIS n. g.

Form *Andrena* like, but with only two submarginal cells, the second (morphologically second and third) larger than the first, and receiving the first recurrent nervure a considerable distance from its beginning, and the second a less, but not small, distance from its end; basal nervure meeting transverso-medial, which is very oblique; marginal cell long, obliquely truncate at apex; stigma small but distinct; clypeus and supraclypeal area of male yellow; mandibles bidentate; body hairy; hind spur of hind tibia curved, finger like; middle and (especially) hind tarsi with joints two to four produced behind; area of metathorax triangular. The specimen was softened, to extract the mouth-parts, but they did not come readily, and I desisted, for fear of injuring the unique type. Pre-

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sumably, judging from the other characters, the tongue is of the Colletid type, although the insect has an extraordinary superficial resemblance to the American *Andrena prunorum* Ckll. The hind legs have a very distinct, lanceolate, knee plate. The last antennal joint is flattened at apex.

Andrenopsis flavorufus sp. n.—♂ Length about 10½ mm.; head broad, but facial quadrangle considerably longer than broad, the orbits slightly converging below; face and vertex with much long orange hair, cheeks with white hair; mandibles (except apex), labrum, clypeus and supraclypeal area yellow; clypeus with the anterior margin rather bulging, smooth and very shiny, the sides well punctured; malar space obsolete; antennæ ordinary; scape yellow suffused with red; flagellum clear ferruginous beneath and blackish above, not moniliform; fourth antennal joint very short, broader than long; thorax black, with the hair above fulvous, and beneath white; mesothorax exceedingly densely punctured, with distinct median and parapsidal lines; scutellum rough with punctures like the mesothorax; area of metathorax dull, roughly sculptured, without any trace of a transverse keel; its margin with little cross-ridges separating shining pits; tegulæ ordinary, shining, yellowish-ferruginous; wings somewhat dusky, darker on apical margin; stigma and nervures dark brown; second recurrent nervure bulging outwards; anterior coxæ rather swollen, dark brown; femora and tibiæ clear shining ferruginous, with pale, slightly yellowish hair; tarsi light yellow; basal joint of hind tarsi flat and rather broad; abdomen black, with the hind margins of the segments broadly ferruginous; the second segment is all ferruginous except a patch in the middle and one at each side, and the third is ferruginous at base; the surface is minutely granulosopunctate, and there is a good deal of erect, pale fulvous hair; the basal half of the venter is pale yellowish-ferruginous and bare, the apical part hairy and much darker.

Hab.—"Australia" (no other particulars known); in the British Museum, from the F. Smith collection, 79.22. Compared with *Biareolina* (*neglecta* Dours), our genus is easily recognized by the venation. In *Biareolina* the marginal cell ends in a blunt point on the costal margin, and the stigma is large; in *Andrenopsis* the marginal cell is obliquely truncate, ending in a point away from the costal margin, and the stigma is small.

POSTSCRIPTS.

(1) Vachal (Bull. Soc. Ent. France, 1905) has proposed the genus *Manuelia* for *Halictus gayi*, *posticus* and *gayatinus*.

(2) Alfken has recently asserted that the Chinese *Nomada versicolor*, Smith, is the same as *N. japonica* Smith. When I had the types (both females) before me, it did not occur to me that they were identical, though they are certainly allied. I believe that they are distinct species.

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SYNOPSIS OF EUCERIDÆ, EMPHORIDÆ AND ANTHOPHORIDÆ.

BY CHARLES ROBERTSON.

This is the eighth number of a series of papers on the bees of the neighborhood of Carlinville, Illinois. The terms and signs used here are explained in Can. Ent. 36 : 38–39.

EUCERIDÆ.

Females.

Anterior inferior orbits with a small subtriangular malar space; clypeus nearly contiguous with eye.....4.

Anterior inferior orbits with a large subtriangular malar space; clypeus rather widely separated from eye; scopa rather slender.....1.

1. Scopa simple, rather dense; mp. 6; lp. 18–31 : 7-11; pubescence of thorax ochraceous.....**Synalonia.***

Scopa rather thin, with long, sparse, thinly plumose bristles; mp. 5; pubescence of thorax fulvous.....2.

2. Claws with a short inner tooth, that of hind claw about one-fourth as long as the outer one; clypeus trilobed; mandibles with a distinct exterior angle; mp. 2 nearly as long as 3-5, 3 nearly as long as 4-5; scopa nearly black; abdomen nearly black, with appressed glittering hairs; cell III hardly longer than III_5, shorter than III_4; lp. 21 : 8; 14-16 mm.; *ipomoeæ* in.....**Cemolobus.**

Claws cleft, inner tooth of hind claw more than one-half as long as the outer one; clypeus entire; scopa ochraceous.....3.

3. Mandibles with a basal internal tooth; mp. 2-5 regularly diminishing in length; abdomen with more or less interrupted fasciæ of appressed, ochraceous pubescence; cell III much longer than III_5, a little shorter than III_4; lp. 22 : 14; 15-16 mm.; *strenua* in.....**Xenoglossa.**

Mandibles at apex bidendate; mp. 2 and 3 subequal; segments 2-4 with whitish pubescent fasciæ; cell III twice as long as III_5, about as long as III_4; lp. 17 : 12; 12-14 mm.; *pruinosa* in.....**Peponapis.**

4. Scopa rather slender, whitish, sparsely plumose basally; mp. 5, 1 as long as 2-3; pubescence of thorax mixed with black; abdomen somewhat metallic, segments 2-4 with fasciæ of appressed white pubescence, broad laterally, narrow and basal medially, 5 with a white patch on each extreme side; cell III = III_4; lp. 15 : 6; 12-14 mm.; *condignus* in.....**Florilegus.**

Scopa large; mp. 4; lp. 1 about twice as long as 2.....5.

5. Scopa simple; pubescence of thorax fulvo-ochraceous; segments 2-4 with narrow median white pubescent fasciæ; lp. 16-8; 16-18 mm.; *compta* in.....**Anthedon.**

Scopa densely plumose; lp. 9-19 : 5-10.....**Melissodes.**

* Emended from *caconym* Synhalonia.

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Males.

Anterior inferior orbits with a small malar space; clypeus contiguous with eye, or nearly; at least segment 6 with lateral spines.....4.

Anterior inferior orbits with a large subtriangular malar space; clypeus rather widely separated from eye.....1.

1. Antennæ surpassing thorax, black, joint 3 much shorter than 4; segment 7 without lateral spines; clypeus yellow or white; labrum white; thorax usually pale ochraceous; mp. 6.....**Synalonia.**

Antennæ not surpassing thorax, black above, more or less testaceous beneath; thorax fulvous; mp. 5.....2.

2. Hind claws long, with a very short inner tooth; hind metatarsus arcuate, its upper apical border beveled, produced below; mandibles at apex bidentate, exterior angle spined; clypeus trilobed, with transverse apical whitish band; joint 3 about as long as 4, 5-12 slightly diminishing in length; segments 6-7 dentiform with lateral apical angles; labrum and base of mandibles whitish; 13-17 mm.; *ipomoeæ* in **Cemolobus.**

Hind claws cleft; hind metatarsi simple; clypeus entire.....3.

3. Joint 3 = 4-5; base of mandibles yellow, with an internal tooth; clypeus and labrum largely yellow; segments 5-6 with lateral basal spines, stronger on 6; 14-16 mm.; *strenua* in.....**Xenoglossa.**

Joint 3 about one-third as long as 4, 5-12 slightly diminishing in length; mandibles tridentate, base black; clypeus with yellow spot; labrum black; apex of abdomen without spines: 10-12 mm.; *pruinosa* in **Peponapis.**

4. Antennæ black, not surpassing thorax, joint 3 = 4, 13 longest, curved and produced to a point; thorax fulvous; segments 2-4 with narrow subapical whitish pubescent fasciæ; 5-7 black; 7 without lateral spines; clypeus, labrum and base of mandibles yellow; 14-15 mm.; *compta* in **Anthedon.**

Antennæ more or less yellowish or testaceous beneath, usually dark above, joint 3 shorter than 4, joint 4 longest.....5.

5. Abdomen with metallic reflections, with four whitish pubescent fasciæ, basal on segment 2, median on 3, apical or interrupted on 4-5, with a submedian connection on 4, and sometimes on 5; 5 without, 7 with, lateral spines; clypeus and middle of labrum yellow; mandibles black; mp. 5; 12 mm.; *condignus* in.....**Florilegus.**

Abdomen without metallic reflections; segment 5 usually with lateral spines; mp. usually 4, sometimes 3, rarely 5.....**Melissodes.**

SYNALONIA Patton.

Females.

Hind spur hooked; pubescent fasciæ white on segments 2-4, more or less fuscous on 5, subbasal on 2, submedian on 3; lp. 31 : 11; 13-17 mm. **speciosa.**

Hind spur simple.....1.

1. Vein IV_3 about one-third before apex of cell III_5; abdomen black; 14-16 mm.....3.

Vein IV_3 about one-fourth before apex of cell III_5; 12-14 mm.....2.

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2. Scopa fulvous; abdomen with white pubescent fasciæ on segments 2-4, more or less fuscous on 5; subapical on 2-3; sometimes the fasciæ are wholly or partly black; lp. 20:9; 12-14 mm. ..... **belfragei.**
Scopa rather dense, black; abdomen black; lp. 18-7 ..... **rosæ.**
3. Scopa fulvous; lp. 26:9; 14-16 mm. ..... **dubitata.**
Scopa blackish or fuscous; 16 mm. ..... **fuscipes.**

Males.

Hind spur hooked; segments 2-5 with whitish pubescent fasciæ; 6 with lateral spines; ventral segment 6 with two flat spines; joint 3 two or three times as long as 2; malar space small; clypeus yellow; 13-16 mm. **speciosa.***

Hind spur simple; segment 6 without lateral spines ..... 1.
1. Anterior inferior malar space large; vein IV$_3$ about one-half before apex of cell III$_5$; abdomen black; clypeus yellow; larger ..... 3.
Anterior inferior malar space small; vein IV$_3$ about one-fourth before apex of cell III$_5$; 11-14 mm ..... 2.
2. Clypeus white; mandibles rarely with basal dot; abdomen with whitish fasciæ ..... **belfragei.**
Clypeus yellow; mandibles usually with a basal dot; abdomen black, sometimes obscurely whitish fasciate ..... **rosæ.**
3. Joint 3 one-half as long as 4; 15 mm. ..... **illinoensis.**
Joint 3 less than one-third as long as 4; 13-16 mm. ..... **dubitata.**

MELISSODES Latreille.

Females.

Scutel and disc of mesonotum without evident black or fuscous hairs ..... 11.
Scutel and disc of mesonotum with evident black or fuscous hairs ..... 1.
1. Wings hyaline, or nearly, sometimes purplish; cells III and III$_4$ usually subequal; smaller species ..... 6.
Wings more or less clouded or infuscated; cell III usually shorter than III$_4$; larger species ..... 2.
2. Segment 4 with an apical white pubescent patch on each side; scopa anteriorly whitish; elsewhere the pubescence is black; wings blackish; lp. 16:8; 12-16 mm. ..... **bimaculata.**
Segment 4 with a continuous apical pale pubescent fascia; scopa, except on metatarsus posteriorly, pale ochraceous; mesonotum with a subquadrate black patch; wings yellowish ..... 3.
3. Abdomen with broad fasciæ of closely appressed white pubescence extending to margins on segments 2-4; 5-6 fuscous; pubescence pale ochraceous; vertex without black hairs; tegulæ testaceous; hind metatarsi fulvous posteriorly; middle of mandibles rufous; cells III and III$_5$ subequal; lp. 12:6: 13-15 mm. ..... **illinoensis.**
Abdomen without broad apical fasciæ on segments 2-3 ..... 4.

* In Trans. 22:126, 1895, *S. speciosa* is written as a synonym of *S. frater*, but in January, 1903, on examining a cotype of *S. frater*, I found the hind spur was not hooked as in *S. speciosa*.

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4. Fascia on segment 2 narrow, median, continuous; 3 with a basal fascia; fascia on 4 with a patch of black pubescence on the disc; vertex more or less black in front; disc of mesonotum nearly bare, sparsely punctured; hind metatarsi fulvous posteriorly; middle of mandibles rufous; tegulæ piceous, sometimes testaceous; lp. 16 : 8; 11-13 mm.; *sp. nov.;* 50 specimens ..... **variabilis.**

Fascia on segment 2 obsolete, or nearly, oblique; vertex with black hairs..5.

5. Pleura largely black; segment 2 impunctate; oblique lateral fascia on 3; and usually on 2; black patch on mesonotum separated from tegulæ; tegulæ testaceous; lp. 18 : 8; 15-17 mm. ..... **obliqua.**

Pleura ochraceous; segment 2 distinctly punctured; 3 with subapical, sometimes interrupted, fascia; fascia on 4 notched with black posteriorly; black patch on mesonotum reaching tegulæ; tegulæ black; lp. 16 : 8; 14-17 mm. ..... **coloradensis.**

6. Black patch on mesonotum reaching tegulæ, or nearly; vertex strongly black ciliate; fascia on segment 4 usually with a patch of black hair apically, at least on the disc; front and middle legs with pubescence more blackish ..... 9.

Black patch on mesonotum distinctly separated from tegulæ; vertex at most with some black hairs in front; fascia on segment 4 entire; front and middle legs with pubescence pale ..... 7.

7. Wings whitish, nervures pale; patch on mesonotum and scutel rather small and fuscous; lp. 11 : 6; 11-13 mm. ..... **nivea.**

Wings less whitish, nervures darker; patch on mesonotum and scutel more black ..... 8.

8. Tibial scopa pale ochraceous posteriorly; segment 1 with narrower whitish margin; lp. 14 : 7; 12-14 mm. ..... **vernoniæ.**

Tibial scopa more fulvous posteriorly; segment 1 with broader whitish margin; lp. 12 : 6; 12-13 mm. *sp. nov.;* 3 specimens ..... **coreopsis.**

9. Pubescence ochraceous, blackish on clypeus, labrum, vertex, mesonotum between tegulæ, scutel, usually the thorax and abdomen beneath; scopa, except metatarsi posteriorly, ochraceous; segments 2-4 with pale fasciæ; bordered with black on 4; sometimes entirely black, except the scopa and some pale hairs on face, cheeks, collar, pleura, metathorax, legs and base of abdomen; lp. 9 : 5; 11-12 mm. .. **similima.**

Pubescence cinereous; fascia on segment 4 rarely with a black apical border; lp. 12 : 6; 10-12 mm. ..... 10.

10. Scopa whitish; hind metatarsi blacker posteriorly; pubescence of mesonotum short, thin, black, whitish on anterior median portion; segment 2 nearly impunctate, at least on the disc, broad apical margin bare; fascia on 2 thin, whitish, oblique, widely interrupted; fascia on 4 commonly with a bare notch posteriorly; scutel more convex and opaque; antennæ, tegula, tarsi and nervures darker; *sp. nov.;* 57 specimens **vernoniana.**

Scopa more ochraceous; hind metatarsi less black posteriorly; pubescence of mesonotum longer, more dense, pale in front of an arcuate line between tegulæ; segment 2 distinctly punctured between the fasciæ, the disc pubescent, apical margin narrower and usually with appressed black hairs, fascia less oblique, less white, usually continuous; scutel more flat and shining; antennæ, tegulæ, tarsi and nervures more reddish; *sp. nov.;* 60 specimens ..... **boltoniæ.**

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11. Fasciæ on base and middle of segment 2, on middle of 3, and apical margin of 4 ..... 14.
Fasciæ obsolete, or nearly; at least the front and middle legs and under parts black; head, thorax above and base of abdomen ochraceous ..... 12.
12. Scopa black; tegulæ testaceous; often oblique fasciæ on sides of segment 3 and sometimes apical patches on each side of 4, white; wings blackish; vein III_4 usually with a stump at the bend; lp. 18:8; 17-19 mm. **atripes.**
Scopa ochraceous; wings more hyaline; tegulæ black ..... 13.
13. Pubescence above short, dense, pale, of occiput black; abdomen black; lp. 19:10; 13-14 mm. ..... **cnici.**
Pubescence above long and more fulvous, of occiput the same; vertex in front more or less black; sides of segment 2 often, and of 3 sometimes, with narrow oblique fasciæ; lp. 12:6; 13-15 mm.; *sp. nov.*; 49 specimens **autumnalis.**
14. Fascia on segment 4 not enclosing a diamond-shaped black patch; vertex without black hairs, except sometimes a few on the sides ..... 16.
Fascia on segment 4 enclosing a diamond-shaped black patch; tegulæ testaceous; pubescence of thorax above ochraceous, beneath black or fuscous; fascia on 2 narrow, hardly arcuate ..... 15.
15. Hind metatarsi fulvous within; thorax beneath fuscous; vertex usually without black hairs; wings more hyaline; lp. 14:6; 10-13 mm. **petalostemonis.**
Hind metatarsi black within; thorax beneath black; vertex usually with black hairs in front; wings somewhat clouded; lp. 14:7; 13-14 mm. **comptoides.**
16. Pubescence pale, blackish on tarsi and labrum; wings nearly hyaline; tegulæ and nervures blackish; fasciæ rather broad and white, that on segment 4 entire; 15 mm. ..... **pallida.**
Pubescence fulvous ..... 17.
17. Fasciæ broad, nearly covering segments 2-4, that on 4 entire; nervures pale; hind tarsi posteriorly fulvous; tegulæ piceous; mp. usually 4; lp. 14:8; 11-12 mm. ..... **agilis.**
Fasciæ narrow, that on segment 4 notched or interrupted by black posteteriorly; nervures darker; tegulæ testaceous; pubescence of legs, labrum, abdomen beneath and hind tarsi posteriorly usually darker; mp. usually 3; lp. 12:6; 11-13 mm. ..... **trinodis.**

Males.

Segment 7 with lateral spines ..... 3.
Segment 7 without lateral spines; joint 3 nearly one-half as long as 4; clypeus, labrum and base of mandibles yellow; vertex without black hairs; tegulæ testaceous; at least the base of segment 2 with narrow fascia. 1.
1. Pubescence of hind legs black; segment 3 with oblique white fasciæ on each side; wings clouded; mesonotum and scutel without black pubescence; 16-18 mm. ..... **atripes.**
Pubescence of hind legs not black; segments 2-6 fasciate; wings not clouded; mesonotum and scutel usually with black or fuscous hairs ..... 2.

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2. Fasciæ on segments 2-3 narrow, arcuate; pubescence fulvous or ochraceous; wings a little yellowish; tarsi black; 14-16 mm. ..... **obliqua.**

   Fasciæ on segments 2-3 broad, reaching apical margin; pubescence pale ochraceous; tibiæ at apex and tarsi inclining to testaceous; apical margin of segment 1 rather broadly pale testaceous; 11 mm. **illinoensis.**

3. Length 8-11 mm.; joint 3 at shortest point not longer than 2; abdomen with fasciæ continuous, distinct; wings hyaline ..... 10.

   Length 11-16 mm.; middle-sized or large species with joint 3 at shortest point longer than 2, or with the fasciæ usually interrupted, indistinct or wanting ..... 4.

4. Base of mandibles and labrum usually colored ..... 6.

   Base of mandibles black; labrum black, rarely with a small spot; abdomen at least above with pubescence almost entirely black, except on bases of segments 1-2; tegulæ black ..... 5.

5. Pubescence of legs black, short; elsewhere black, except on face, cheeks beneath, vertex, thorax above, pleura and bases of segments 1-2, where it is cinereous or pale ochraceous; black, except clypeus, joints 4-13 beneath, bases of claws, sometimes the spurs and apical joints of tarsi; joint 3 twice as long as 2, 4 not much longer than 5; 12-13 mm. **cnici.**

   Pubescence long and fulvous, except on abdomen, where it is almost entirely black; spurs and apical joints of tarsi testaceous; joint 3 not longer than 2, 4 much longer than 5; labrum rarely with a yellow spot; narrow, oblique, dull fulvous or whitish fasciæ on sides of segment 2, sometimes also on 3, rarely continuous, rarely wanting; 11-14 mm. **autumnalis.**

6. Pubescence usually black, except on face, tibiæ, tarsi and sides of segments 3-5; wings clouded; tegulæ black; mandibles sometimes entirely black; labrum yellow; joint 3 about twice as long as 2; 11-13 mm. **bimaculata.**

   Pubescence not black, except sometimes on vertex, mesonotum, scutel and abdomen ..... 7.

7. Segment 2 distinctly punctured, a short apical fascia on each extreme side; continuous fasciæ on segments 4-6; pubescence fulvous, patches on mesonotum and scutel usually black; wings more or less fuliginous; tegulæ black; clypeus, labrum and base of mandibles yellow; joint 3 little longer than 2; 14-16 mm. ..... **coloradensis.**

   Segment 2 obscurely punctured, with basal and median whitish fasciæ, continuous fasciæ on 3-4 ..... 8.

8. Wings hyaline, nervures rather pale; pubescence and ornaments whitish; scutel sometimes with black hairs; labrum with a whitish stripe or sometimes entirely black; tegulæ black; broad apical margins of segments 1-5 pale testaceous: 5 with strong lateral spines; 12-14 mm. **vernoniae.**

   Wings and nervures yellowish, more fuscous beyond middle; pubescence ochraceous; ornaments yellow ..... 9.

9. Segments 5-7 black; mesonotum, scutel and vertex without black pubescence; tegulæ testaceous; joint 3 little longer than 2; 12-14 mm. **comptoides.**

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Segment 5 usually with white fascia, 6-7 black; scutel and patch on mesonotum usually blackish; tegulæ usually black, more or less testaceous posteriorly; apical margins of segments sometimes pale testaceous; tarsi and apex of tibia testaceous; joint 3 about twice as long as 2; 12-14 mm. ..... **variabilis.**

10. Apical margins of segments broadly pale testaceous; wings clear; nervures pale; tegulæ piceous; clypeus, labrum and base of mandibles marked with yellow; flagellum fulvous, a little darker above ..... 12.

Apical margins of segments black or dull testaceous; wings less clear; nervures usually dark; flagellum fulvous beneath, blackish above .... 11.

11. Pubescence fulvous, not mixed with black on mesonotum or scutel; mandibles black at base; middle of labrum yellow; clypeus yellow; mp. usually 3; tegulæ testaceous ..... **trinodis.**

Pubescence cinereous, mixed with black on scutel and mesonotum; mp. usually 4; tegulæ piceous; clypeus white; labrum with white stripe; nervures dark ..... **vernoniana.**

12. Pubescence pale ochraceous to fulvous; labrum yellow ..... **agilis.**

Pubescence white; middle of labrum yellow ..... **nivea.**

EMPHORIDÆ.

Females.

Cell III nearly equals $III_4 + III_5$; vein IV_3 near middle of cell III_5; no pulvilli; head, thorax and sides of segment 1 with pale ochraceous pubescence; mp. 3 ciliate; paraglossæ setiform, a little longer than lp. 1; lp. 22 : 18; 13-17 mm.; *Emphor bombiformis* in ..... **Emphorinæ.**

Cell III about equals III_4; III_5 short, vein IV_3 near its end; pulvilli present; pubescence pale and mixed with black on head and thorax above; segments 2-4 with white pubescent fasciæ; elsewhere the pubescence black; mp. 3-4 ciliate, 6 minute; paraglossæ shorter than lp. 7; lp. 18 : 51; 11-14 mm : *Entechnia taurea* in ..... **Entechniinæ.**

Males.

Pulvilli absent; abdomen not fasciate; 14-17 mm.; *Emphor bombiformis* in **Emphorinæ.**

Pulvilli present; segments 2-6 with white pubescent fasciæ; 9-13 mm.; *Entechnia taurea* in ..... **Entechniinæ.**

ANTHOPHORIDÆ.

Females.

Apex of cell $III_1 + 2$ on costa; cell III_4 narrower above; vein IV_3 a little before III_5; *a* before V_2; mandibles with an internal tooth; joint 3 longer than 4-5; pubescence above on thorax and base of abdomen ochraceous, elsewhere black; tibial scopa copious; mp. 2 twice as long as 1; lp. 28 : 8; 15 mm.; *floridana* in ..... **Emphoropsis.**

Apex of cell $III_1 + 2$ more remote from costa, appendiculate; cell III_4 not narrowed above; vein IV_3 near middle of cell III_5; *a* about opposite V_2; scopa rather scanty ..... 1.

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1. Hind knee-plate lanceolate; mandibles tridentate; cell III_5 broader above; joint 3 nearly equals 4-7; pubescence griseous and black, fulvous on segments 5-6; mp. 2 four or five times as long as 1; lp. 32:6; 11-13 mm.; *terminalis* in.....**Clisodon.**

Hind knee-plate circular; mandibles bidentate.....2.

2. Cell III_4 broader above; joint 3 nearly as long as 4-6; thorax and base of abdomen, more or less, ochraceous, elsewhere black; mp. 2 twice as long as 1; lp. 28:8; 12-15 mm.; *abrupta* in *gen. nov.*; type *Anthophora abrupta* Say.....**Anthemo ssa.**

Cell III_4 not broader above; mp. 2 about thrice as long as 1.....3.

3. Joint 3 as long as 4-6; segments 1-4 with white fasciæ; pubescence ochraceous, except on legs posteriorly; lp. 36:5; 15-16 mm.; *walshii* in **Amegilla.**

Joint 3 longer than 4-7; black, ochraceous above on thorax and segment 1; lp. 46:8; 15-17 mm.; *ursinus* in.....**Podalirius.**

Males.

Middle claw joints simple; clypeus entirely whitish or yellow..... 2.

Middle claw joints ciliate; face marks whitish; clypeus partly black; labrum and scape in front whitish; pygidial process rather distinct, the area indistinct.....1.

1. Joint 3 longer than 4-6; mandibles and abdomen black; pubescence of head, thorax and segment 1 long and griseous or ochraceous, mixed with black on vertex and mesonotum; middle tarsi fimbriate; 15-16 mm.; *ursinus* in.....**Podalirius.**

Joint 3 hardly longer than 4-5; spot on mandibles and apical margins of segments 1-6 white; 14-15 mm.; *walshii* in.....**Amegilla.**

2. Hind metatarsus with a great tooth; apex of labrum concave, black tufted; joint 3 about as long as 4-5; scape in front, labrum and spot on mandible yellow; segment 7 without pygidial area or process, apex concave, bidentate; pubescence of head, thorax, front legs and base of abdomen mostly ochraceous, elsewhere mostly black; 12-14 mm.; *abrupta* in.....**Anthemoëssa.**

Hind metatarsus simple; labrum entire.....3.

3. Joint 3 longer than 4-5; segment 7 furcate; labrum yellow; mandibles and scape usually black; pubescence griseous, mixed with black above; 10-11 mm.; *terminalis* in.....**Clisodon.**

Joint 3 little longer than 4; pygidial area shining; labrum, mandibles and scape black; ochraceous above on thorax and segment 1; *floridana* in **Emphoropsis.**

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DESCRIPTIONS OF NEW SPECIES OF NEOTROPICAL HYMENOPTERA.

BY P. CAMERON.

SPHEGIDÆ.

Trypoxylon nigrispinis sp. nov.

Black, except for an obscure white spot on the base of the hind tibiæ; the face and clypeus thickly covered with silvery pubescence; the wings hyaline, very iridescent, the nervures and stigma black. ♀. Length 5 mm.

Front and vertex opaque, minutely, closely punctured, the former with an obscure furrow below the ocelli; the hind ocelli are separated from the eyes by half the distance they are from each other; the anterior is separated from the posterior by a greater distance than these are from each other. Clypeus not keeled. Apical half of mandibles brownish. Temples covered with silvery pubescence. Mesonotum closely, minutely punctured. The central area on the metanotum is not very clearly separated and is closely, finely, transversely striated and slightly depressed; the apex has an oblique slope, has a wide, shallow furrow above. Metapleuræ distinctly, closely obliquely striated; the others smooth and shining; the striated part is bounded below by a stouter keel. First abdominal segment of almost equal width, being only slightly narrowed towards the base; it is about one-third longer than the 2nd; the segments become slightly gradually thicker towards the apical; the basal 3 segments united are as long as the thorax. Legs slender, the hind tibiæ not dilated; the long spur of hind tibiæ reaches to the middle of the metatarsus. Apex of radial cellule lanceolate, gradually narrowed to a point; the apex of cubitus and lower part of transverse cubital nervure are roundly dilated outwardly. Mandibles unidentate. Pygidial area sharp-pointed.

Hab.—Mexico.

This little species comes nearest to *T. rugifrcns* Cam. from Vera Cruz; the two may be separated thus:

Base of median segment strongly obliquely striated; calcaria pale; the transverse cubital nervure forming with the cubitus a straight oblique angle, the apical abscissa of the cubitus straight, oblique..**rugifrons** Cam.

Base of median segment weakly transversely striated; calcaria black; apex of cubitus and lower part of transverse cubital nervure broadly rounded, dilated outwardly, the apical abscissa rounded.....**nigrispinis.**

The radial cellule in *rugifrons* is narrower and longer, the radius reaching close to the apex of the wings; the basal abscissa of the radius being about one fourth of the length of the apical; in *nigrispinis* it is slightly more than half the length.

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Trypoxylon rufidens sp. nov.

Black, densely covered with silvery pubescence, opaque; mandibles, clypeus and labrum bright rufous; the labrum ending in 2 stout, slightly divergent teeth; metanotum not depressed, without a basal area; the basal part with a stoutish keel which extends shortly beyond the middle; the base has 2 or 3 oblique striæ on either side of the keel; the rest closely, transversely striated; the striæ distinct and slightly curved; the apical slope has 2 or 3 transverse keels on the top. Propleuræ weakly striated in the middle below; the metapleuræ strongly, closely and regularly striated; the lower basal half bordered by a stout, curved keel, which is slightly angled in the middle. Basal 3 segments of the abdomen roundly dilated at the apex above; the basal segment is as long as the 2nd and the half of the 3d. Tibial and tarsal spines whitish, tinged with fulvous. Radial cellule short, the apical abscissa of the radius straight, oblique, not quite twice the length of the basal; the recurrent nervure is received from the apex of the cubital cellule by slightly more than the length of the transverse cubital nervure. Hind ocelli separated from each other by double the distance they are from the eyes. From nearly opposite the middle of the eye incision a stout, curved keel runs to each antenna on the inner side; the antennæ are united by a strong transverse keel. Front tibiæ broadly testaceous at the apex in front. Length 7 mm.

Hab.—Mexico.

This species comes near to *T. nigrispinis* and *T. rugifrons;* these may be known from it by the depressed base of metanotum, without a longitudinal keel. Characteristic is the bidentate rufous labrum of *rufidens.*

Nysson longispinis sp. nov.

Black, the tibiæ and tarsi rufo-testaceous, the hind tibiæ darker behind, the apices of the basal 5 abdominal segments and of the 3d and 4th below much more narrowly, rufo-testaceous, tinged with yellow; the thoracic spine from shortly beyond the middle rufo-testaceous. Wings hyaline, slightly suffused with fuscous; the nervures black. ♀. Length 11-12 mm.

Head and thorax densely covered with silvery pubescence; a band of pale golden pubescence on the base of the mesonotum and another down its centre. Front and vertex rugosely punctured, the front more closely than the latter; the keel above the antennæ stout, longish. Clypeus alutaceous, its apex depressed, brownish, not quite transverse. Middle of mandibles obscure testaceous. Mesonotum with shallow, moderately large punctures. Scutellum irregularly longitudinally striated, the parts between the striæ depressed. Post-scutellum broadly, roundly depressed in the centre, the sides being clearly, roundly raised and distinctly separated from the scutellum. Metanotal spines curved, long, diverging, about twice as long as they are wide at the base. Metanotum areolated; the basal areæ much longer than wide, the apical wider compared with their length, more irregular and with some striæ in the centre. Propleuræ above smooth, the centre below with stout, clearly separated keels. Mesopleuræ coarsely, irregularly reticulated-punctured, the metapleuræ more closely reticulated except at the base. Basal segment closely, distinctly, the 2nd less closely and more obscurely punctured, the other segments smooth. Pygidium finely rugose, irregu-

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larly longitudinally striated; large, broad, rounded at the apex. Base of 2nd ventral segment broadly, gradually rounded. Sides of scutellum projecting above. Hind tibiæ serrate; there are at least 9 stout teeth, dark testaceous in color. The space between the ocelli is depressed, Lower edge of occiput margined, but not sharply. The upper part of the mesopleuræ before the apical depression projects into a longish tooth or tubercle. The cheeks below project into a distinct, sharply-pointed tooth, which is longer than it is wide at the base. Apices of abdominal segments depressed, covered with golden pile. The anal cellule in hind wings ends long before the origin of the cubital nervure.

Except on the sides behind the spine, where it is thickly covered with pale golden pubescence, the metanotum is almost bare, and is shining; the central keel bifurcates at the middle, forming an elongate area, roundly narrowed at the base; it bears a stout irregular keel in the centre of the apical half; in the centre of the apical slope is a large, somewhat pyriform area, the wide end of which is above.

Hab.—Mexico.

Comes nearest to *N. mexicanus* Cress., which agrees with it in having a tooth on the mesopleuræ. This tooth is described by Handlirsch in his Monograph (Sitzb. d. Kais. Akad. d. Wissen., Wien, xcv, p. 303) as "short, moderately pointed"; in the present species it is longish, longer than wide and bluntly rounded on the outerside; in *mexicanus*, in the ♀, the 6th segment bears a large yellow spot; the middle area of the metanotum is covered with yellow hair, while in *N. longispinis* it is quite bare of pubescence, only the sides at the base being pilose.

TANYOPRYMNUS gen. nov.

Radial cellule long, lanceolate; 3 cubital cellules, the 3d along the radius about one-third longer than the 2nd which receives both the recurrent nervures; the 1st transverse cubital nervure roundly curved, except near the cubitus, where it emits a distinct nervure on the inner side. Eyes very large, strongly converging below, reaching to the base of the mandibles. Ocelli prominent, placed in a triangle. Face short, wider than long, its apex reaching to the middle of the eyes; clypeus twice longer than wide, its apex transverse. Labrum projecting. Legs long, slender, all the tarsi much longer than the tibiæ; the basal two joints of the hinder together as long as the tibiæ; tibiæ and tarsi sparsely spined; the middle tibiæ with 2 calcaria; claws long, simple. First abdominal segment broad at the base, becoming gradually wider towards the apex; the pygidium depressed, roundly incised at the apex. Sides of median segment broadly rounded. Last joint of antennæ normal,

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not incised, depressed or hooked; the apical joints of the flagellum thickened. The transverse median nervure is received shortly beyond the transverse median. Cubitus in hind wings originating before the transverse median nervure. Prothorax very short.

The affinities of this genus are with the *Mellinini*, but it has not the appearance of a *Mellinus* or *Gorytes*. The very different neuration separates it from the former; from the latter the elbowed 1st transverse cubital nervure, with its distinct nervule, the very much longer clypeus, long tarsi and longer, narrower, lanceolate cellule, should readily separate it. It has more the appearance of a *Stizini* than of one of the *Mellinini*.

Tanyoprymnus longitarsis sp. nov.

Black; the under side of antennal scape, face, clypeus to shortly below the middle, a line on the pronotum, tubercles, a line along the sides of the mesonotum, one on the post-scutellum, an interrupted line on the 1st abdominal segment and continuous broader ones on the others, yellow, these extending below on to the 3rd and following segments. Tibiæ behind and more or less of the basal joint of the tarsi in front, the 4 front tibiæ at the base behind and the calcaria, yellow. Wings hyaline, the nervures black. ♂. Length 9 mm.

Smooth, covered with a white down; the mesothorax sparsely punctured. Hind ocelli separated from the eyes by a distinctly greater distance than they are from each other. Third joint of antennæ about one-third longer than the fourth, shorter than the following two united. The 2nd ventral segment projects below the first. The hind legs, and especially the tarsi, are much longer than the anterior.

Hab.—Mexico.

Anthophilus hirticeps sp. nov.

Black; face, clypeus, inner orbits narrowly to the top of the eye incision, an elongate large mark on the front, roundly narrowed and ending in a short point above, narrowed below and united to the yellow on the face, two marks, broader than long and obliquely narrowed on the outer side, on the sides shortly behind the eyes, a short line behind them, a broad band on the hinder edge of the pronotum, 2 short, elongated oval spots close to the base of the mesonotum, scutellums, tubercles, a large mark, roundly narrowed to a point on the top above, and slightly oblique below, a broad band on the base of the 1st abdominal segment, an equally broad, but more irregular one, occupying the greater part of the 2nd and narrower, trilobate bands on the apices of the following three, yellow. The apices of the femora broadly (the hinder more narrowly than the anterior), the tibiæ and the tarsi yellow. Basal five joints of the flagellum broadly yellow. Wings hyaline, the costa and stigma fulvous. ♂. Length nearly 7 mm.

Head and thorax thickly covered with longish, white pubescence; the latter above sparsely, the mesopleuræ more closely and strongly punctured. Front punctured and closely, finely, longitudinally striated. A deep triangular depression (the narrowed end behind) on the base of the metanotum, its centre and the

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part behind finely transversely striated. First abdominal segment strongly and closely punctured, the others almost impunctate. Third cubital cellule along the radius distinctly longer than the 2nd; the 1st recurrent nervure is received shortly behind the middle of the cellule. Last ventral segment with a broad, semicircular incision. Apical half of scutellum deeply furrowed in the middle. Tarsal fringe long and white. Apex of clypeus broadly rounded; the hair pencil long, white. Abdominal segments hardly constricted at the sutures.

Hab.—Mexico.

Does not fit exactly into any of the genera of Dr. Ashmead's Synopsis, but comes as near to *Epiphilanthus* as any.

Anthophilus melanaspis sp. nov.

Black; a large, somewhat triangular mark (the narrowed upper end is rounded, the lower transverse) on the clypeus, a broadish line on the lower half of the inner orbits, narrowest above, a mark on the lower part of the front, the top broad, irregular, the lower and longer part narrower and rounded, 2 oblique spots behind the ocelli, 2 short lines on the outer part of the orbits, behind the top of the eyes, a line on the hind edge of the pronotum, tegulæ, basal half of 2nd abdominal segment (the line of equal width) a narrow line on the apex of the 3d, the apical half of the 4th and 5th, a mark on the sides of the 6th and small marks on the sides of the 3rd to 5th segments, yellow. Tibiæ and base of tarsi yellow in front. Wings hyaline, the stigma fulvous, the nervures darker colored; the 3d cubital cellule along the radius distinctly longer than the 2nd; the 1st recurrent nervure received almost in the middle of cellule; the 3d transverse cubital nervure angled and emitting a short branch near the cubitus. Antennal scape yellow; the 2d joint of flagellum brownish below. ♀. Length 8 mm.

Hinder part of vertex strongly but not closely punctured, the rest of it and the front closely rugosely punctured, the punctures intermixed with striæ. Mesonotum strongly, irregularly punctured, the apex closely rugose. Scutellum smooth in the centre, the sides somewhat strongly punctured. Basal half of postscutellum smooth, the apical weakly punctured. Median segment closely strongly punctured; a deep, crenulated furrow of equal width on the basal half; the part surrounding the apex of this is raised and smooth. Propleuræ weakly, the mesopleuræ strongly punctured; the lower part of the former striated; the base of the metapleuræ closely obliquely striated, the rest closely punctured. Abdominal segments strongly, deeply but not closely punctured, their base smooth, pygidium smooth.

Hab.—Mexico.

Anthophilus maculiventris sp. nov.

Black; the clypeus, a large triangular mark above, the narrow top reaching close to the eye incision, mandibles to shortly beyond the middle, a small transverse line in the centre of the face, a transverse mark on the front, roundly narrowed below, the sides obliquely dilated above, the top broadly, slightly depressed, two large oblique marks behind the ocelli, a longish mark, transverse behind, rounded before on the upper outer orbits, a line on the pronotum, tegulæ, two small marks below them, the anterior the smaller and rounder; postscu-

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tellum, basal half of second abdominal segment, the apex of the third, the fourth and fifth almost entirely, the apices of the basal three ventral, of the fourth more broadly, the band dilated broadly laterally, and almost the whole of the fifth, yellow. The four front tibiæ yellow, black behind, the posterior for the greater part yellow. Wings hyaline, the stigma fulvous, the nervures paler colored. ♀. Length 10 mm.

Antennal scape yellow, the flagellum brownish at the base and apex below. Vertex strongly but not closely punctured, an oblique smooth space and a raised longitudinal one in the centre behind. Front closely rugosely punctured; the raised part above the antennæ smooth. Clypeus and cheeks very sparsely punctured. Basal half of mesonotum with large, deep, clearly separated punctures, the apical almost impunctate. Scutellum with a curved row of punctures in the middle. Postscutellum smooth. Metanotal area with a wide crenulated furrow in the centre; the part bordering it finely, closely, longitudinally striated, the outerside punctured; the apical slope finely, distinctly, closely punctured; the central fovea large, deep, somewhat triangular. Propleuræ strongly, below finely punctured, the lower part being also striated. Mesopleuræ coarsely punctured, as is also the sternum; the metapleuræ less strongly punctured and striated in the middle. Basal 3 segments of abdomen strongly, deeply, but not very closely punctured. The 3rd cubital cellule, along the radius, distinctly shorter than the 2nd, the 1st recurrent nervure received almost in the centre of cellule.

Hab.—Mexico.

This species appears to belong to Dr. Ashmead's genus *Epiphilanthus*. Cf. Canad. Ent., 1901, p. 294.

MUTILLIDÆ.

Dimorphomutilla ? luatha sp. nov.

Black, densely covered with longish white hair; the calcaria and tarsal spines white; wings hyaline, the nervures black; radial cellule short, wide, the radius forming almost a semicircle; the 3rd transverse cubital nervure only distinct in front, the 2nd recurrent nervure with the lower half only distinctly defined; the 1st transverse cubital nervure straight, obliquely sloped; the 2nd roundly curved. Head wider than the thorax, the temples long, oblique, not much narrowed; the occiput almost transverse, the hind angles not acute but rounded. Mandibles longish, bidentate, the subapical tooth small. Front and vertex strongly, distinctly punctured, the former more closely than the latter. Face closely rugose, obliquely narrowed above to a point, forming a triangle. Antennal tubercles rufous. First joint of flagellum wider than long, the second longer than wide, longer than the third. Pro- and mesonotum somewhat strongly punctured; the former more closely than the latter, the punctures on it being clearly separated. Metanotum reticulated. The upper part of the metapleuræ is irregularly reticulated, and finely, closely, longitudinally striated. Abdominal petiole becoming gradually wider from the base to the apex, in length slightly more than the width at the apex; at the base is a stout spine on either side. The hair on the abdomen is long, but not forming bands; the pygidium punctured towards the apex; its apex rounded; epipygium punctured, depressed

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at the apex in the middle. Apical half of ventral keel roundly dilated. ♂. Length 4.5 mm.

This little species appears to run into Dr. Ashmead's genus *Dimorphomutilla*. Cf. Canad. Ent., xxxv, 325.

ICHNEUMONIDÆ.

Agrypon flaviceps sp. nov.

Luteous, the thorax paler, the head except the greater part of the front and vertex pale lemon-yellow, the ocellar region blackish; legs colored like the body, the four front coxæ and trochanters pale yellow; antennæ fuscous, longer than the body; wings short, clear hyaline, the nervures and stigma pale testaceous. ♂. Length 9; ovipositor 1 mm.

Smooth, shining, thickly covered with short pubescence. Scutellum flat, appearing almost depressed above. Base of metanotum areolated, the central area elongated, dilated in the middle, the lateral basal area wider than long, semicircular; the remainder irregularly reticulated, the reticulations wider than long. The transverse median nervure is received shortly beyond the transverse basal; the disco-cubital nervure is not quite interstitial; but the 3rd discoidal cellule is pointed at the base; the hind tibiæ are long, longer than their femora or tarsi. The transverse cubital nervure is long; half the length of the recurrent nervure.

This species agrees fairly well with the definitions given by authors, except that the "trochanter is not or little longer than the trochantellus" (cf. Schmeideknecht, Zeit. f. Hymen., 1902, p. 361), but much longer than it, as in *Atrometus*. Neither the latter genus nor *Agrypon* has been recorded, so far as I know, from America.

This seems to be an *Agrypon* Foer., as defined by Dr. Ashmead (Bull. U. S. Nat. Mus., xxiii, 89), it having the disco cubital nervure interstitial with the discoidal, the 3rd discoidal cell being therefore pointed at the base; and the hind tibiæ are long; but according to Schmiedeknecht (Zeit. f. Hym. ü. Dipter., i, 1902, 361) these are the characters of *Atrometus* Foer., as given by the German author, the latter genus having also short tibiæ, with the basal joint of the trochanters only slightly longer than the apical; in *Agrypon* it is double the length of the 2nd, as it is in the species I have described. There is certainly some confusion in the definitions of the genera as given by the American and German authors.

I translate Schmiedeknecht's diagnostic characters so that they may be compared with Dr. Ashmead's:

Parallel nervure not interstitial. Hind tibiæ longish. Trochanter not or only little longer than the trochantellus. Antennæ somewhat of the length of the body ..... **Agrypon** Först.

Parallel nervure interstitial, the discoidal cellule narrowed to a point. Hind tibiæ short. Trochanter almost double the length of the trochantellus. Small species ..... **Atrometus** Foer.

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VESPIDÆ.

Odynerus simplicipes sp. nov.

Black; a large squarish mark on the upper half of the clypeus, with the sides and apex rounded, a small mark on the top of the vertex close to the eyes, a line on the pronotum, dilated in front, a small round mark below the tegulæ, dilated downwards at the base, the hinder third of the tegulæ, a large crescent-shaped mark on the hinder half of the scutellum (the rounded end at the apex), the apices of the abdominal segments, the lines dilated laterally, the 1st line distinctly so, yellow; the tibiæ and tarsi yellow, the former black behind. Wings hyaline, the nervures black. ♂. Length 7 mm.

Form short and broad, the thorax oval, rounded before and behind, the sides of the median segment rounded, not angled. Head wider than the thorax, the temples roundly narrowed. Clypeus longer than wide, its apex ending in two triangular teeth, which are longer than they are wide at the base. Antennæ with the apical half distinctly thickened, flattened below, without a hook, and apparently not curled. Hind ocelli separated from each other by a slightly greater distance than they are from the eyes. Median segment short, a narrow furrow down the middle, the sides broadly rounded, not projecting much. Head and thorax closely punctured, the metapleuræ closely striated, coarsely above, finely, more closely below; both are covered closely with short silvery pubescence. Legs slender, the middle femora not denticulate. Basal segment of abdomen cup shaped, short, not separated by a constriction from the second. First recurrent nervure received shortly beyond, the 2nd shortly in front of the middle of the cellule; the radial cellule wide, short, rounded at the apex. Palpi small.

Hab.—Mexico.

This little species comes closest to the subgenus *Epiponus* and to the Division *Antepiponus*, Section 2 (cf. Saussure, Syn. of Amer. Wasps, 360), but is not quite typical, *e. g.* the antennæ can hardly be said to be "curled up into a spiral at the extremity;" and the femora are simple, not dentate as in the males of the typical *Epiponus*.

BRACONIDÆ.

Iphiaulax mamivænsis sp. nov.

Black; the basal five segments of the abdomen red, the legs pale testaceous; the mandibles rufous, black at the apex; palpi pale testaceous, wings hyaline, slightly tinged with yellow; the nervures and stigma yellow; a blackish cloud commences shortly behind the transverse basal nervure, wider in front than behind, extending to the apex of the basal abscissa of the radius and not extending much beyond the base of the 1st cubital cellule; there is a similar but larger cloud at the apex, commencing at the end of the stigma and shortly beyond the 2nd transverse cubital nervure; there is a wider cloud on the apex of the hind wings. ♀. Length 7; terebra 2 mm.

Smooth and shining; the 2nd abdominal segment in the middle and the 3rd punctured more distinctly all over; the furrows on sides of the 1st segment with some clearly separated, not very stout keels. Area on 2nd segment narrowed to

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a sharp point, twice longer than it is wide at the base and continued as a stout spine to the base of the apical fourth of the segment; the sides stoutly keeled; the bordering furrows shallow, obscurely striated; the curved lateral furrows wide, deep. Suturiform articulation wide, finely striated in the middle. There is a smooth, moderately broad, not very prominent keel on the basal two-thirds of the 3rd segment, which has, shortly behind the middle, a smooth curved furrow; there being another on the 4th. Face alutaceous, opaque, the rest of the head and the thorax smooth and shining; there is a narrow, finely margined furrow in the centre of the front. Wings long; apical abscissa of radius distinctly longer than the basal two united; the recurrent nervure is received in the apex of the 1st cubital cellule, clearly separated from the transverse cubital. Temples wide, obliquely roundly narrowed. Palpi yellow. The hind femora bear an interrupted black line below; the hind coxæ are black. Tegulæ luteous. The thorax is sparsely haired. Parapsidal furrows fine, rufous colored towards the apex. First abdominal segment as long as it is wide at the base.

Hab.—Mamiva; Rio Purus (Prof. I. W. H. Trail).

Iphiaulax jutahæensis sp. nov.

Black; the sides of the middle segments and their apices narrowly rufous, the stigma entirely pale ochraceous, the base of the radius testaceous, the wings light fuscous, the base of the radial cellule, the first cubital and a narrow cloud outside the recurrent nervure hyaline. Plate on 2nd abdominal segment triangular, ending in a short point; its length, without the apical point, as long as the width at the base; it reaches close to the apex, from which it is clearly separated. ♀. Length 12 mm.; terebra 3 mm.

Face and median segment thickly covered with longish grey pubescence; the pleuræ not so thickly with similar but shorter pubescence; the upper and lower part of the propleuræ more broadly bright red. Smooth and shining, except the face, which is opaque, not smooth; the clypeus above is bordered by a moderately wide and deep furrow, bordered by distinct ridges. Frontal furrow narrow, deep, reaching to shortly beyond the middle. Mandibles dark rufous to shortly beyond the middle. Palpi black at the base, the apical joints dark testaceous. Middle lobe of mesonotum distinctly separated. Middle lobe of first abdominal segment clearly separated, bounded laterally by a distinct furrow, which bears at irregular intervals, some transverse keels; in the centre of the apex is a short, stout, longitudinal keel, bordered by a furrow, wider than itself. The furrow bordering the keel on the 2nd abdominal segment is stoutly, obliquely crenulated, the oblique furrow distinct, narrow, smooth; suturiform articulation closely but not strongly striated. Underside of hind tarsi thickly covered with pale pubescence; the spines dark testaceous; the calcaria dark rufous. Apical abscissa of radius about as long as the basal two united.

Hab.—Amazonia; Rio Jutaha (Prof. I. W. H. Trail).

This species is easily separated by the much broader (compared with the length) plate on the 2nd abdominal segment. The furrows on the 3rd and 4th abdominal segments are wide, almost smooth.

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Iphiaulax Trailii sp. nov.

Black; the sides and apical slopes of the abdominal segments rufous; wings dark fuscous, the stigma, except at the apex, pale ochraceous; as is also the base of radius; the apical abscissa of radius shortly but distinctly longer than the basal two united. Area on 2nd abdominal segment elongated, extending almost to the apex and becoming gradually narrowed to a sharp point; it is bordered by a shallow furrow bearing nine or ten stout, longish oblique striæ. ♂. Length 11 mm.

Except at the base, apex and a narrow keel down the centre, the raised central part of the 1st abdominal segment is irregularly punctured, the central smooth keel being bordered by 3 elongated irregular foveæ; the lateral furrows wide, deep and bearing 9 stout, more or less oblique keels; the apex and the basal parts between the foveæ are more deeply depressed. Area on 2nd segment bordered by stout, more or less oblique keels; the oblique lateral area wide and with 3 or 4 keels at the base. Suturiform articulation wide, irregularly closely striated; the furrows on the 3rd, 4th and 5th segments are distinct, moderately deep and closely striated; the striation on the 5th being weaker than on the others. Head and thorax thickly covered with grey pubescence, more sparsely on the mesonotum and more thickly on the median segment than on the rest; smooth, shining. Frontal furrow not reaching to the apex, wide, deep. Legs thickly covered with grey pubescence; that on the coxæ being longer and denser than on the rest; the calcaria black. The 3rd abdominal segment is closely, somewhat strongly longitudinally striated-reticulated, the 4th in the centre striated-punctured.

Hab.—Amazonia, Mamiva (Prof. I. W. H. Trail).

Iphiaulax Schrottkyii sp. nov.

Similar in size and coloration to *I. Trailii*, described above, but easily separated by there beiug a distinct, smooth triangular plate on the base of the 3rd abdominal segmeut, and by the apex of the 1st bearing a stout keel, bordered by a depression. Lateral furrows on 1st abdominal segment wide, the keels stout, irregular, widely separated. Plate on 2nd segment smooth, long, becoming gradually narrowed to a point; the bordering keels are stout, longish, irregular, forming almost reticulations; the oblique keel wide, smooth, except for 2 or 3 short striæ at the base; the part outside its apex is finely, closely, longitudinally striated. Suturiform articulation closely striated, as is also, but somewhat more strongly, the oblique lateral furrow; the furrow on the 3rd is distinct, deep, closely striated. Mandibles dark rufous in the middle. Palpi black. Length 11 mm. ♂.

Hab.—Amazonia; Cararamer (Prof. I. W. H. Trail).

Iphiaulax javaryensis sp. nov.

Black; the basal 5 segments of the abdomen bright red (like the color of red sealing-wax); the entire body, except the face, which is granular, smooth, impunctate, shining; the wings dark fuscous, the stigma, except at the apex, pale ochraceous; the 3rd abscissa of the radius longer than the basal two united; tegulæ black. ♀. Length 10–11; terebra 5 mm.

Head and thorax covered with grey pubescence; longest and thickest on face,

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malar space and metanotum. Lateral furrows on 1st abdominal segment stoutly, irregularly, somewhat closely striated. Plate on 2nd segment reaching to shortly beyond the base of the apical third of the segment, it is gradually narrowed to shortly beyond the middle, then continued as a stout keel; it is bordered by deep, smooth, moderately wide furrows; the oblique lateral ones are almost smooth, narrow, distinct. The suturiform articulation and the furrow on the 3rd segment almost smooth; there is a narrower, similar furrow on the 4th; the apical segments black above, red below. Calcaria black. Malar space slightly longer than usual Temples wide, rounded, not oblique.

Hab.—Rio Javary. December. (Prof. I. W. H. Trail).

Comes near apparently to *I. Buguetti* Spin. The abdomen is not quite so broad as usual.

Iphiaulax Harperi sp. nov.

Head and antennæ black, thorax castaneous, the abdomen reddish castaneous, legs dark castaneous, the tibiæ and tarsi darker colored than the femora. Wings almost hyaline to the transverse basal nervure in the anterior, to shortly beyond the middle in the posterior, the rest fuscous, lighter colored in the 1st cubital cellule and along the recurrent nervure; the stigma pale ochraceous throughout as is also the base of the radius. ♀. Length 12; terebra 3 mm.

Temples obliquely narrowed. Frontal furrow wide, extending to shortly beyond the middle, slightly narrowed and rounded at the apex. Parapsidal furrows distinct, becoming wider and shallower towards the apex. The head and median segment densely covered with long pale fulvous hair. Abdomen smooth and shining; the furrows on the sides of 1st segment wide, smooth, except for a few broken striæ on the inner side. Area on second segment longish, reaching to shortly beyond the middle; gradually narrowed to shortly beyond its middle, then continued as a keel; the furrows narrow, deep, crenulated; the lateral furrows smooth, wide, shallow. Suturiform articulation wide, shallow, crenulated, as are also the furrows on the 3rd and 4th segments; that on the latter is about half the length of that on the 3rd. The apical abscissa of the radius is distinctly longer than the basal two united; the radial cellule is long, sharp pointed at the apex.

Hab.—Demerara. (Rev. Mr. Harper).

Iphiaulax Watertoni sp. nov.

Black; the abdomen red, darker at the apex, the upper half of the propleuræ and the middle of the mesonotum of a darker red; the median segment thickly covered with white pubescence; wings dark fuscous, the stigma with slightly more than the basal two-thirds, pale ochraceous. Length 8; terebra 3 mm.

Temples roundly narrowed. Front not much depressed, its furrow reaching to the middle. Mandibles dark red, black at the apex. Palpi black. Middle area of the 1st abdominal segment narrow, compared with the sides; the lateral depression wide, with 7 widely separated keels of moderate thickness; the outer border, at the apex, is as wide as this depression, and is divided into two by a longitudinal keel. Basal area on 2nd segment an elongated triangle, with a short apical keel, not reaching to the apex of the segment, and bordered by a

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moderately wide, stoutly crenulated furrow; lateral furrows wide, deep, smooth. Suturiform articulation and the following 2 furrows closely crenulated; the 4th furrow almost smooth. Facial furrow wide, deep, reaching to the middle.

Hab.—Demerara. (Rev. Mr. Harper).

Iphiaulax Mathewi sp. nov.

Black; entirely smooth and shining, the basal 4 segments of the abdomen and the base of the 5th narrowly, vermillion red; the wings uniformly dark fuscous, with black stigma and nervures. ♀. Length 8 mm.; terebra 2 mm.

Face, cheeks and malar space thickly covered with long white pubescence; the face shagreened. Palpi black, covered with white pubescence. Temples oblique, rounded behind, the occiput almost transverse in the middle. Abdomen smooth and shining; central part of 1st segment longer than wide, rounded at the base and apex; the lateral furrows wide, with 3 stout abbreviated keels on the inner-side in the centre. All the furrows are wide, deep and smooth; the area on the 2nd segment forms an elongated triangle—longer than its width at the base—and ending in a distinct keel, which ends shortly beyond the middle of the segment; it is surrounded by a wide furrow, with three stout, oblique keels in the centre; the lateral depression on the segment is wide and deep. Suturiform articulation smooth, wide and deep. Third abscissa of radius slightly curved upwards, a little longer than the basal two united. Calcaria white. The oblique furrow on the mesopleuræ is distinctly defined and extends to the middle. The abdomen forms an elongated oval. Frontal furrow distinct, deep, reaching to the antennæ.

Hab.—West Coast of Mexico. (G. F. Mathew, R. N.)

Iphiaulax occidentalis sp. nov.

This species agrees so closely in size and coloration with *I. Mathewi*, described above, that it might easily be mistaken for its male. It may be readily known from it by structural characters, as follows:

Plate on second abdominal segment with the terminal spine as long as it; a short but stout keel issuing from the middle of the suturiform articulation; lateral furrows on first abdominal segment with six short, broken, transverse keels.....**occidentalis.**

Plate on second abdominal segment with the spine much shorter than it; no keel issuing from the suturiform articulation; the keels on the sides of the first abdominal segment not broken, stout... .....**Mathewi.**

Head and thorax densely covered with long white hair (in *Mathewi* the pubescence is short and sparse). Face alutaceous, opaque. Temples straight, obliquely narrowed, if anything longer than the antennal scape. Frontal furrow clearly defined, extending from the antennæ to the ocelli. Malar space furrowed, shorter than the antennal scape. Pleural furrow wide, shallow, extending from the base to the apex. The furrow surrounding the plate on the 2nd abdominal segment is wide and deep, and bears 3 stout, longish, oblique keels; the apex of the depression is broadly rounded. Suturiform articulation wide, smooth and

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deep; the following 3 furrows being also smooth and deep, but narrower. Calcaria fuscous. Legs densely covered with white hair, much more densely than in *I. Mathewi*. The apical abscissa of the radius is shorter compared with the basal, than it is in *Mathewi*. Length 7 mm. ♂.

Hab.—West Coast of Mexico. (G. F. Mathew, R. N.)

Rhogas aztecus sp. nov.

Ferruginous, the flagellum of the antennæ and the tips of the mandibles black; the wings hyaline, the stigma dark, the nervures light fuscous. Palpi dark testaceous, covered with white pubescence. ♂. Length 7 mm.

Head alutaceous, almost punctured. Eyes coarsely facetted. Thorax finely, closely, distinctly punctured. Scutellar depression deep, the base and apex with oblique straight slopes, meeting in the centre below. Median segment more rugosely punctured than the rest; there is a distinct keel extending from the base to the top of the apical slope; in the centre of the latter, at the apex, are 2 short, fine keels; on the apex of the sides is a short, stouter keel. The 1st, 2nd and 3rd abdominal segments to shortly beyond the middle are closely, longitudinally striated, and all are keeled down the centre; the apex of the 3rd and the following segments are smooth and shining. The second cubital cellule is narrowed towards the apex; the 3rd abscissa of the radius is twice the length of the 2nd; the transverse median nervure is received shortly behind the middle of the cellule.

The propleuræ are more or less striated; the centre of the mesopleuræ shining. First abdominal segment slightly longer than the second, which is longer than wide, and is distinctly margined, almost keeled, along the sides. Legs densely covered with white pubescence. Malar space nearly as long as the antennal scape. Eyes clearly converging above. Temples as long as the top of the eyes.

Hab.—Mexico.

This species cannot well be mistaken for any of the few recorded species of *Rhogas* from Central America.

Agathis ? tricarinata sp. nov.

Black; the basal segment of the abdomen entirely, the 2nd above to shortly beyond the middle, entirely below, as is also the base of the 3rd ventral segment of the metanotum, bright red; wings dark fuscous, a hyaline cloud, broadest behind, on the fore wings, commencing near the apex of the stigma; the hind wings entirely fuscous. ♀. Length 7; terebra 4 mm.

Smooth, impunctate, the mesonotum with 3 distinct keels in the centre, placed nearer the base than the apex. From the sides of the anterior ocelli (but not touching them) two stout keels run to the antennæ where they unite; opposite their base a similar keel runs to the eyes. The 5-jointed maxillary palpi are pale testaceous, except at the base. Mandibles pale testaceous at the base. Malar space not quite half the length of the eyes. Scutellum keeled above on the sides and apex. Sides of metanotum keeled; in the centre are 2 not very distinct keels close together, which unite with a stouter keel bordering the top of the apical slope. Apex of mesopleuræ dilated on the upper half; the depression widened below and with 3 stout teeth. Base of first abdominal segment dilated

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above. Areolet triangular; the cubitus ends, or becomes faint, shortly beyond it; there is no branch on the transverse cubitus which is largely bullated below; the transverse basal nervure is interstitial. The middle lobe of the mesonotum clearly separated. Claws slender, simple.

Hab.—Amazonia; Rio Mauhes. (Prof. I. W. H. Trail.)

This is not a typical *Agathis*. It might be a *Cremnops*, if it were not for the small simple claws.

Agathis Trailii sp. nov.

Black; the metanotum, basal 4 segments of the abdomen and the legs luteous; a pale yellow band round the apex of the scutellum; the outer side of posterior coxæ, apex of hind tibiæ and the hind tarsi black; the labrum and palpi pale yellow. Wings yellowish hyaline, a narrow fuscous cloud at the base of the stigma and a broader one at the apex. Length 10 mm. ♀.

Smooth and shining; the breast and legs at the base covered with long white hair, the tibiæ much more thickly with stiffer fulvous hair; the tarsi with black hair. Head shining, the face and clypeus shining, punctured, somewhat thickly covered with longish black hair. Areolet triangular; the transverse cubital nervure without a branch; transverse median nervure interstitial. All the claws cleft, the inner claw much shorter than the outer, especially the posterior. Malar space somewhat more than half the length of the eyes. Front above bordered by a stout, roundly curved keel, which reaches to the eyes. Ovipositor not projecting. Metanotum without keels. Scutellum large, flat, not keeled, its apex rounded. Hind legs long and stout, their coxæ about 4 times longer than wide, the long spur of the black hinder calcaria reaches to shorter beyond the middle of the metatarsus. Wings longer than the body.

Hab.—Amazons; Rio Juruá. (Prof. I. W. H. Trail.)

This species belongs to the *Agathidini* as defined by Dr. Ashmead (Proc. U. S. Nat. Mus., xxiii, 127), and in his table would come into *Agathis*. if the claws were not cleft; and a keel on the front; it is not a *Troticus*, as the palpi are normal. In the table given by Szépligeti (Termés. Fuzetek, xxv, 64) it agrees best with *Agathis*, but the head, viewed from the front, is shorter.

Agathis erythrogastra sp. nov.

Black; the median segment, abdomen and hind legs, except the trochanters, red; the hind tarsi black above; the calcaria reddish; wings uniformly fuscous, the stigma and nervures black. ♂. Length 7 mm.

Antennæ much longer than the body. Smooth and shining; the head covered with blackish, the pleuræ with white pubescence. Scutellum roundly convex, narrowed towards the apex, the sides not keeled. Parapsidal furrows only indicated at the base. Area on centre of median segment distinct, narrowed sharply at the base, the keels stout and waved; in the centre are 2 stout, twisted keels. First segment of abdomen twice longer than wide; there is an elongated, deep fovea in the centre near the apex; the depressions at the base of the 2nd and 3rd segments are deep; they have also a transverse furrow shortly beyond the mid-

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dle; that on the 2nd is deeper and more clearly defined than that on the 3rd. Palpi black. Areolet small, triangular; the nervures thick; the recurrent nervure is dilated backwards in front. Mesopleural furrow narrow, not very deep, smooth.

Hab.—Mexico.

Comes nearest, of the known Central American species, to *A. tibialis* Cam.

Cenostomus trichiosomus sp. nov.

Black; densely covered all over with white pubescence; the 2nd abdominal segment testaceous, the base of the 4 front tibiæ narrowly and the hinder tibiæ to shortly beyond the middle, pale yellow; the latter with a black mark near the base. Wings hyaline, slightly suffused with fuscous towards the apex, the costa and stigma black, the nervures testaceous. ♀. Length 8; terebra 1 mm.

Antennæ 37-jointed, densely covered with short black pubescence. Face closely and strongly punctured; the clypeus is more strongly, less closely punctured, except narrowly in the centre and more broadly at the apex, where it is smooth. Front and vertex closely punctured, except round the ocelli and a triangular space below them, where they are smooth and shining. Pronotum and mesonotum weakly punctured; their pleuræ, except at the base, smooth and shining. The scutellum roundly convex, weakly punctured. Median segment closely, rugosely punctured; it is more densely and longly covered with white hair than the mesonotum; there is a smooth keel down the apical half in the centre. Pleural sutures stoutly crenulated. Abdomen smooth, the apical segments densely pilose; the suturiform articulations smooth, narrow, curved. Areolet triangular, the nervures touching in front. Legs stout, the calcaria pale at the base.

Hab.—Mexico.

The maxillary palpi, so far as I can make out without extraction, appear to be 4-jointed, and this, with the triangular areolet and that the parapsidal furrows do not extend much beyond the middle, makes me refer the species to *Cenostomus* Foerster. Foerster says of his genus "Das Gesicht ist hier zwar verlängert, aber aus dem Munde ragt kein rüsselformiger oder Konischer Zapfen hervor, wie manihn so höchst charakteristisch bei den Agathidoiden findet." In my species there is a distinct malar space, in length about two-thirds of the antennal scape; but the face is not so much lengthened—rostriform—as in *Agathis*.

CYNIPIDÆ.

Heptamerocera azteca sp. nov.

Black; smooth and shining, the antennæ, tegulæ and legs bright red; wings clear hyaline, the nervures pale testaceous. Abdominal hair fringe rufous. Apex of scutellum with a deep, longer than broad, cup; the keels bordering the

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sides of the apex are pale; in the centre, along the sides, are 3 foveæ in a row; the sides and apex of the scutellum project roundly beyond the cup and are strongly rugosely punctured; the rounded apex projects roundly over the metanotum, which is bare in the middle; this bare part is bordered by 2 curved keels, which converge slightly below; it has a steep, slightly oblique slope; the lower apical part projects clearly out from the upper and larger; it has a slightly oblique slope and is bordered laterally by a keel; the sides are covered with a narrow band of woolly hair; the metapleuræ bare. Mandibles red, their teeth black. Areolet obsolete. There are no parapsidal furrows. Antennæ much longer than the body; 15-jointed; the 3rd joint shorter than the 4th. Marginal cellule large, open along the fore margin. Cubitus obsolete. ♂. Length 3 mm.

Hab.—Mexico.

In Dr. Ashmead's table of the Eucoilinæ (Psyche, 1903, pp. 60–73), this ♂ would run into the neighborhood of *Heptamerocera*.

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DESCRIPTIONS OF FOUR NEW SPECIES OF ODYNERUS FROM MEXICO.

BY P. CAMERON.

Odynerus (Stenancistrocerus) iolans sp. nov.

Black; a broad curved mark on the sides of the clypeus above, a small triangular (longer than wide at the apex) above the antennæ, a small spot on the innerside of the eye incision in the centre, a short line on the outer orbits above, a narrow line on upper edge of pronotum, united to a similar one on the upper basal half of the propleuræ, a large bell-shaped mark on the pleuræ below the tegulæ, an irregular mark on the apex of the mesonotum, opposite the tegulæ, postscutellum, a broad line, narrowed below, on the sides of the apical slope of the metanotum, a narrow line on the apex of the 1st abdominal segment, continued below half way to the base of the segment, and a similar but slightly narrower line, all round, on the 2nd, yellow. Legs black, the apex of the femora, the 4 anterior tibiæ and the base of the hinder in front yellow. Wings fuscous-violaceous, the nervures and stigma black. ♀. Length to end of 2nd segment 9 mm.

Clypeus pyriform, longer than its greatest width, its apex depressed, slightly, broadly, roundly incised; sparsely punctured, the apex more strongly and closely than the rest. Mandibles with a triangular mark at the junction of the basal two keels. Front and vertex rather strongly and closely punctured. Prothorax and mesothorax with the scutellum rather closely and strongly punctured. Tegulæ large, conchiform, piceous; opposite them is an area thickly covered with silvery pubescence. Postscutellum narrowed to a blunt angle. Sides of apical slope of metanotum margined by a keel above; the apical slope excavated; the central keel is on the apical half only; the sides are blunt, not distinctly angled. First segment of abdomen longish bell shaped, bluntly rounded at the suture, which is stronger laterally than in the centre; it is strongly and closely punctured, much more strongly than the sides; its apex is smooth. The 2nd segment is barrel shape, longer than it is wide at the apex, which is turned up slightly. The second cubital cellule is narrowed in front. Scape of antennæ yellow, the flagellum reddish-brown below.

The body is long and slender; the thorax is transverse in front, narrowed behind; it is more than twice longer than wide. The species agrees best with *Stenancistrocerus*. The 1st abdominal segment is longer than usual.

Odynerus (Pachodynerus) halmus sp. nov.

Black; covered with a velvety pile; a broad band (the upper third) on the top of the clypeus, a broad mark over the antennæ, the lower part of the eye incision, a longish mark near the top of the outer orbits, a moderately broad line on the top of the pronotum, a narrow one on the upper half of the base of the propleuræ, tegulæ, a spot on the sides of the scutellum, postscutellum, a large spot on the upper side of the apex of metanotum, a narrow line on the apex of the 1st abdominal segment, dilated at the sides and having there attached to it a

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moderately large oblique, somewhat oval mark, and bands on the apices of the basal 3 segments all round, yellow, tinged with fulvous. Legs black, the outer-side of the tibiæ yellow. Wings reddish yellow, darker colored, more violaceous towards the apex. ♀. Length to end of 2nd segment 12 mm.

Clypeus, if anything, wider than long, its apex transverse, its sides forming short blunt teeth; the centre with longish, scattered punctures. Front and vertex rugosely punctured. Base of thorax not quite transverse, the sides rounded, slightly narrowed; the apex has the sides only slightly dilated. Pronotum and mesonotum, scutellum and postscutellum, except at the apex, strongly punctured; the apex of postscutellum smooth, transverse. Metanotum closely, transversely striated; the sides blunt, the upper part bordered by a narrow curved keel. Propleuræ and mesopleuræ closely, strongly punctured; the metapleuræ closely striated. There is a wide, oblique furrow on the basal half the mesopleuræ. Basal segment of abdomen short, cup-shaped, not separated from the 2nd, with which it is continuous.

Belongs to Saussure's Section B. *a*, Syn. of Amer. Wasps, 237. It resembles closely the species of the *nasidens* group. The ♂ has all the abdominal segments bordered with yellow, the yellow on the head and thorax being broader; the clypeus is entirely yellow; it is as long as wide, its sides project into short triangular teeth; the space between them is slightly but distinctly rounded. The mark over the antennæ is broad, rounded and narrowed below, transverse above. The flagellum is black, except the hook and the apical two segments below; the hook is long, curved and reaches to the base of the 3rd segment. In both sexes the anterior nervures, the costa and stigma are reddish fulvous, the tegulæ are large, reddish fulvous, with an oval fuscous mark at the base.

Odynerus (Pachodynerus) astræus sp. nov.

Black; thickly covered with a silky fulvous pile; a narrow transverse line over the antennæ, a short line opposite the antennæ, a short one near the base of the antennæ, the upper edges of the pronotum all round, a line on the base of the propleuræ in the middle, a mark on the base of the tegulæ, a small mark on the pleuræ below them, postscutellum, the upper outer angles of the metanotum, a line on the 1st abdominal segment above and on the others all round, luteous. The anterior tibiæ in front and the base of their tarsi luteous. Wings reddish yellow, their apex tinged with fuscous; the stigma and basal nervures luteous, the apical nervures darker colored. ♀. Length to end of 2nd segment 8 mm.

Front and vertex strongly and closely punctured. Clypeus longer than wide, above almost impunctate; the apex with longish, scattered punctures; the apex is wide, almost transverse, the sides projecting into indistinct teeth. Thorax rather strongly and closely punctured; the apical slope of postscutellum smooth, transverse. Upper half of the sides of metanotum sharply keeled; the apical half transversely striated. Apex of the 2nd segment and the following closely somewhat strongly punctured; the 1st segment cup-shaped, as wide as the base of the 2nd.

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The ♂ has the clypeus pyriform, rounded above; the apex roundly incised; the scape of antennæ is yellow below; there is a yellow line on the base of the mandibles, one on the lower edge of the eye incision; there are two short lines, the one below the other above the antennæ; the antennal hook is stout, black; the 1st abdominal segment is punctured, somewhat strongly, not smooth as in the ♀; the 2nd is punctured throughout; the apex of the postscutellum is punctured, and that of the metanotum rougher.

The flagellum of the antennæ is rufous below; the bands on the 5th and 6th abdominal segments are wider than those on the middle ones. Comes, in Saussure's system, Syn. of Amer. Wasps, 238, near to *O. brachygaster* Sauss. It is also related to *O. halmus*, here described, but that may be readily known from it by the metanotum having a large mark on the sides, not a narrow line, and the line on the 1st abdominal segment is dilated backwards into a large spot. The lateral angles of the metanotum may be black, and the clypeal teeth rufous.

Ancistrocerus argelus sp. nov.

Black; the clypeus, a line on the centre of the basal half of the mandibles, a line above the antennæ, its lower half narrowed, a line on the lower edge of the eye incision, a short line behind the top of the eyes, a line on the apex of pronotum, one united to it on the inner side of the pronotum, postscutellum and the apices of all the abdominal segments yellow, the yellow on the thorax and abdomen tinged with rufous; the sides of the apical slope of the metanotum broadly dull yellow, tinged with rufous. Antennal scape yellow, the flagellum rufous-brown beneath. Tibiæ yellow in front, the femora tinged with brown, apex of tarsi rufotestaceous. Wings hyaline, tinged with fulvous in front; the costa and stigma fulvotestaceous, the nervures darker colored. ♂. Length to end of 2nd segment 7 mm.

Clypeus longer than wide, sparsely, weakly punctured, the apex with a distinct rounded incision. Front and vertex closely, rugosely punctured; apex of mandibles rufous. Prothorax and mesothorax closely and strongly punctured above, more sparsely and weakly on the sides, a wide irregular furrow on the centre of the mesopleuræ. Base of thorax transverse, the outer angles acute; the sides of the metapleuræ bluntly rounded, rough, the upper sides of the metanotum irregularly reticulated, thickly covered with fulvous pubescence. Apex of metapleuræ with scattered punctures, the base covered with fulvous pile. First abdominal segment elongated cup-shaped; there are two indistinct sutures only indicated on the sides, the apical being more distinct than the basal; the segment is strongly punctured and covered with fulvous pubescence; the 2nd segment is clearly narrowed at the base; it is punctured; its apex and the other segments are more coarsely punctured; the apical edge of the 2nd is weakly raised. Antennal hook stout, black, reaching to shortly beyond the base of the penultimate joint.

Belongs to Saussure's Section 3, Syn. of Amer. Wasps, 206.

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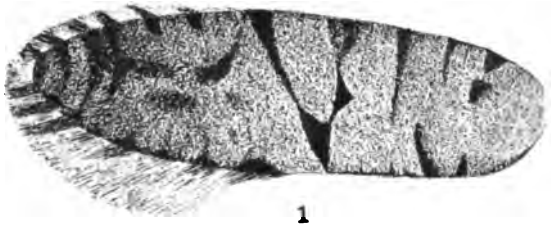

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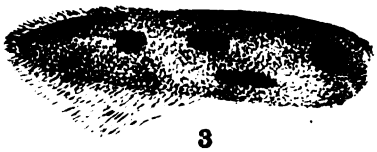

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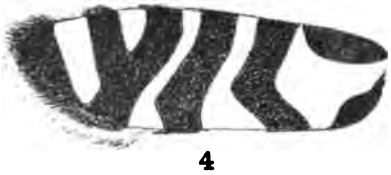

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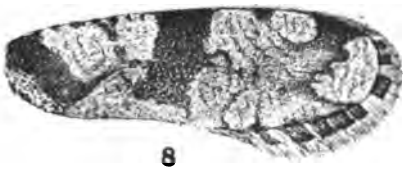

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DIETZ ON NORTH AMERICAN TINEIDÆ.

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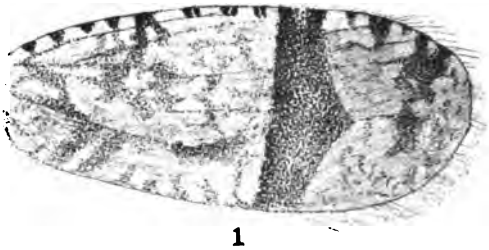

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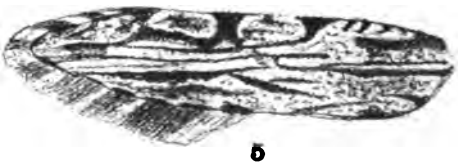

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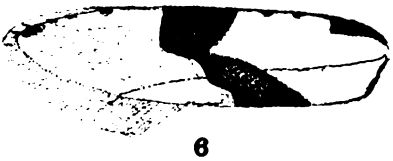

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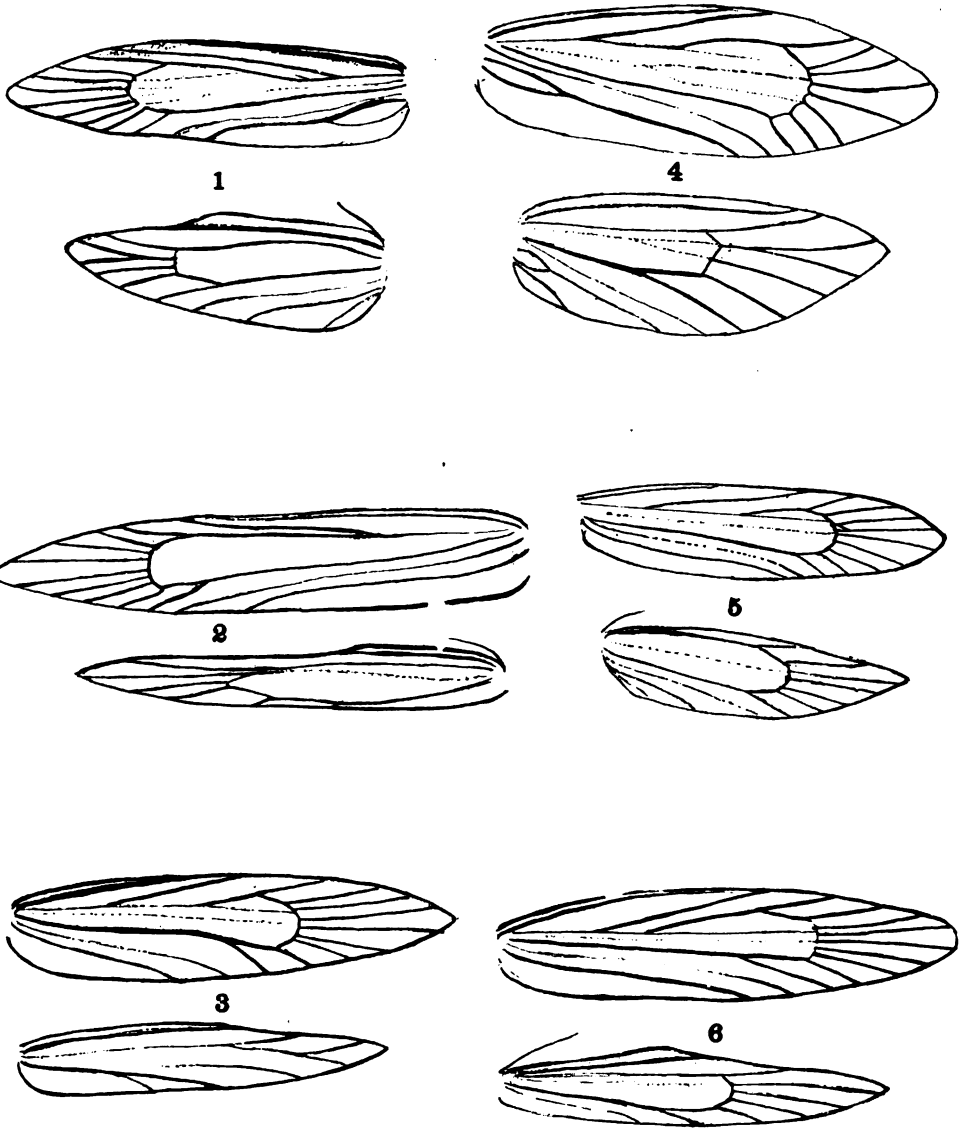

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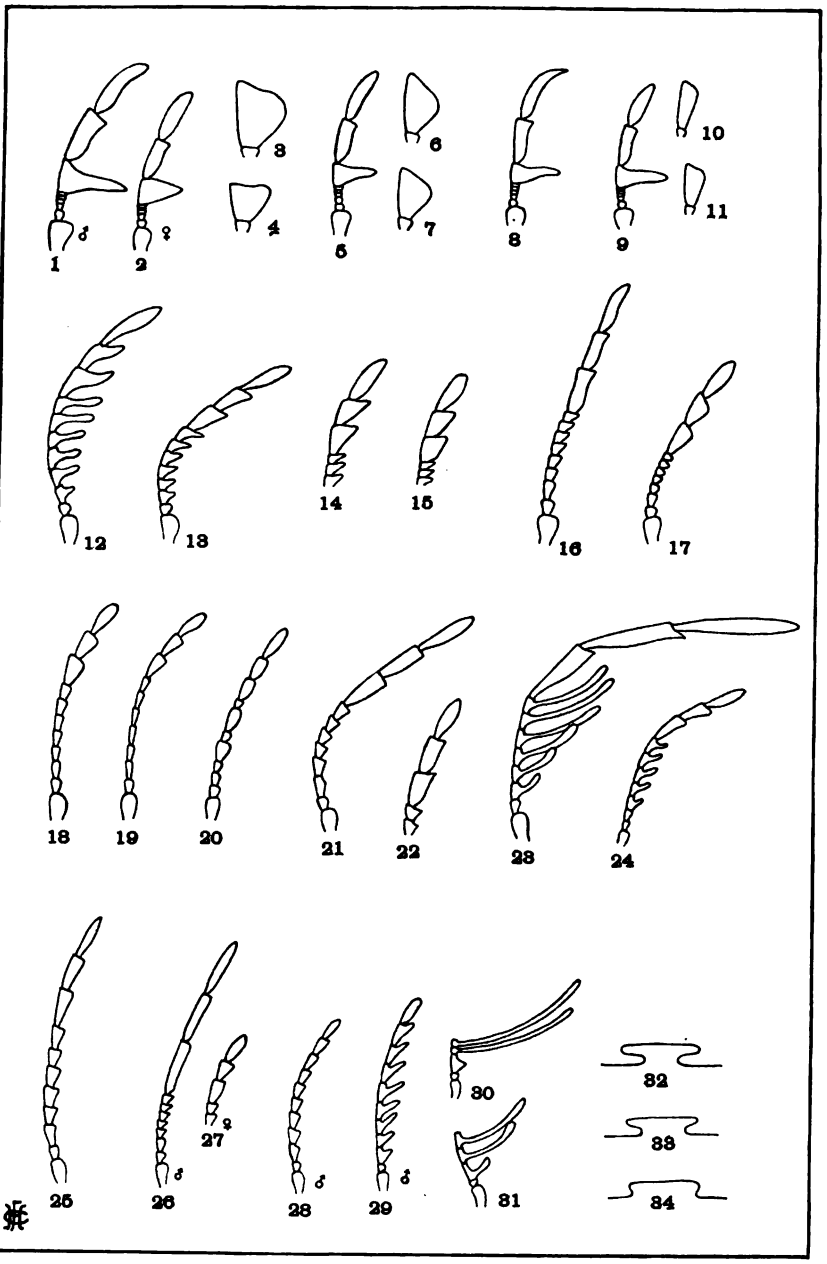

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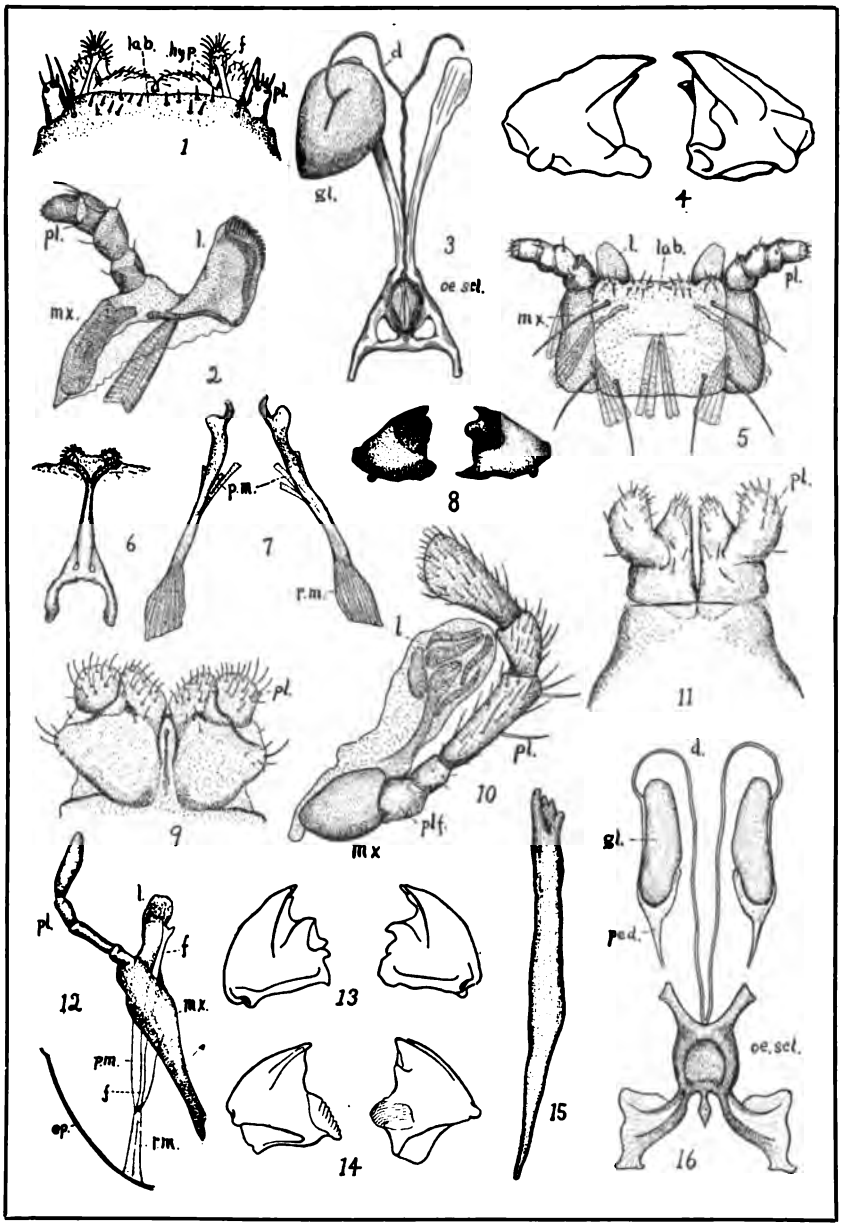

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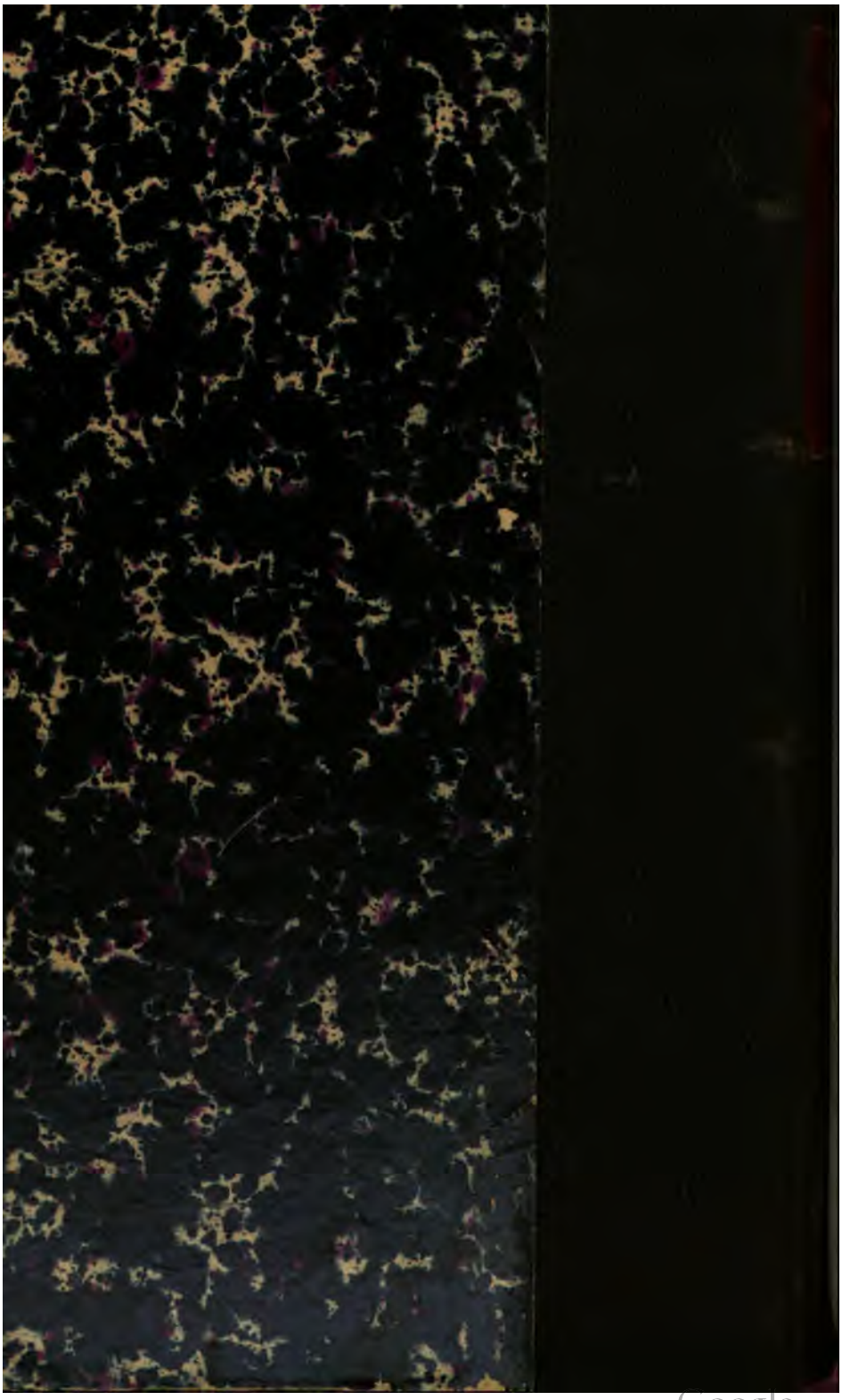
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